Vol. IX

TRANSCRIPT OF RECORD

Supreme Court of the United States

OCTOBER TERM, 1936

No. 539

THE OHIO BELL TELEPHONE COMPANY,
APPELLANT,

vs.

THE PUBLIC UTILITIES COMMISSION OF OHIO

APPEAL FROM THE SUPREME COURT OF THE STATE OF OHIO

FILED NOVEMBER 20, 1936.

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Mr. Dotson: Three others.

Mr. Shuler: I do not care only for the methods, Mr. Anthony, if you are going to answer my question.

The Witness: It is in general the same method as we use in connection with the single ticket and the two tickets.

Mr. Shuler: What operations are saved?

The Witness: Oh, with the postpay coin box method that was in effect prior to the adoption of prepay it was necessary for the operator to ring the called subscriber and get him on the line, then come back and have the calling subscriber deposit his coin. With the new method she handles the call practically as she would any call except that she depresses a key to return or collect the coin.

Mr. Shuler: In the postpay I go up, I take the receiver [fol. 9448] off and put it to my ear and the girl answers, isn't that right?

The Witness: Right.

Mr. Shuler: I then tell her the number desired?

The Witness: Yes.

Mr. Shuler: She then gets the number and says to me "Drop a nickel", doesn't she? She immediately goes off to work and I have my conversation. Now that is the postpay. Now the prepay, I go there and I drop my nickel in the box. I take off the receiver and the girl says "Number, please"; I give her my number; she gets me my number, doesn't she, and she waits to see whether I do get my number, doesn't she?

The Witness: No.

Mr. Shuler: Yes, she does, because if I don't get my number she gives me my nickel back, if I wait long enough.

The Witness: Let me explain this; with the postpay method the operator rang the called subscriber and waited until he answered; he might take a minute, two minutes or three minutes to answer. She is waiting all that time. Then she comes back to me and says "I have your party; please deposit five cents".

Mr. Shuler: Yes.

The Witness: With the prepay, when she gets your number she plugs into the called subscriber's jack or trunk as the case may be and then goes ahead and handles another call.

Mr. Shuler: Makes me stand there and wait.

[fol. 9449] The Witness: No, the called subscriber's bell is being rung; it may take a couple of minutes for him to answer his bell. In the meantime the operator knows what the status of the call is because she has some lamps on her key shelf that indicates to her that your party has either answered or he has not. In the meantime she is working on other calls and is not wasting her time waiting on this subscriber.

Mr. Burr: Isn't the difference, in the post pay your operator is held on the calling subscriber's line and has to stay there and do nothing else until the called subscriber either answers or refuses to answer?

The Witness: That is right.

Mr. Burr: Whereas in the prepay system the moment the operator puts up the connection she is released and can attend to other calls and can go about her regular business pending the time when the called subscriber answers or fails to answer?

Mr. Shuler: Then I stand there and cuss or walk away and leave my nickel in the box.

Mr. Burr: You wouldn't have left yours there, Mr. Shuler.

Mr. Shuler: Oh, I don't know. John Stockwell had to sue your company to get his nickel back.

The Witness: I might state that what makes it possible or practicable with the prepay method for the operator to go ahead with another call pending the answer of the called station is that the nickel has been deposited and is being held in suspense.

[fol. 9450] Mr. Shuler: Not as much as I am.

The Witness: If the subscriber does not answer the coin is returned.

3. Savings for the year 1923 due to using machine ringing trunks instead of manual ringing B trunks.

The number of calls handled during the year 1923 was 278,708,900. The operating saving per call was .075 cents. That figure applied to the number of calls given made a saving of $209,032.00 in operating expense for the year 1923. By operating expense I have in mind traffic operating expense. The mashine ringing method decreases the number of operators required and also decreases the number of switchboard positions required.

Mr. McConnaughey: How do you figure that 7.5 or .075 cents?

The Witness: It is .075

Mr. McConnaughey: .075. How do you figure it?

The Witness: Can I just finish the answer?

Mr. McConnaughey: I don't want to interrupt you but I wish you would state that.

The Witness: I will, if you will let me finish this, and I will have the exact answer.

Mr. McConnaughey: Alright.

The Witness: The reduction in the number of switchboard positions after allowing for the increased cost of machine ringing trunks was $58,345.00. The sum of the operating and switchboard savings was $267,377.00.

Now, in answer to Mr. McConnaughey's question, the units per average call on the basis of manual ringing B [fol. 9451] trunks was .697. The units per call for the average call under machine ringing operation was .528. The reduction in the units per call with machine ringing trunks is .169 units per call. Or, in other words, the reduction in operating work is approximately 25 per cent.

Mr. McConnaughey: Now, that is 25 per cent of what, the cost of an average call, have you figured that out?

The Witness: It would be that too. The units per call under manual ringing operation, as I just stated, is .697. Now the saving under machine ringing operation is .169. .169 divided by .697 equals 25 per cent, which is the reduction in the work per call with the machine ringing method.

Mr. McConnaughey: That is 25 per cent of some amount of money you are using?

The Witness: Why don't you ask me for the reduction?

Mr. McConnaughey: That is alright, but you have not gone quite far enough.

The Witness: I can give you all that information, Mr. McConnaughey. The cost per unit is .4464 cents.

Mr. McConnaughey: That cost would apply in each of these figures of savings, wouldn't it?

The Witness: That is right, same cost. The units per call saved equals .169. The saving per call is the product of those two figures, or .075 cents, and that applied to the number of calls handled gave us the $209,032.00 for the operating savings.

Mr. McConnaughey: That is, that unit that cost .4464 is [fol. 9452] 1/230 of an operator's hour, is it?

The Witness: Well, that is the cost per unit average for the entire company, and——

Mr. McConnaughey: But what is that unit? Is that this traffic unit that you have been talking about?

The Witness: That is based upon a busy hour load of 230 units per hour. If it happens to be an office where we have an extended busy hour, or 245, where we have a peak on local—toll busy hour requirements are always based on 230 units. It is the same traffic unit we have been talking about.

Mr. McConnaughey: That is what I understand.

By Mr. Dotson:

Q. Are you through with your answer to No. 3?

A. Yes, I answered the question, Mr. Dotson, and then answered the inquiry made by Mr. McConnaughey.

Q. Yes, that is alright.

A. 4. Savings for the year 1923 due to using overlapped ringing toll operating method.

The number of calls handled during the year 1923 was 5,363,200. The saving per call in operating that equipment is 1.09 cents. The saving per call in toll circuit expense is .333 cents. The saving per call for both of these items, that is operating and equipment expense and toll circuit expense, is 1.423 cents. This, applied to the number of calls handled, gives a saving of $76,318.00.

Now, under this item I was also asked to explain in what particular this method is of advantage to the subscriber. The answer to that is, first, it speeds up the service; that [fol. 9453] is the overlap ringing method provides for a faster service to the subscriber.

Q. You mean it shortens the time in which the subscriber can avail himself of the service?

A. That is right. Inasmuch as the calling subscriber is in on the connection when the called subscribed answers it makes it possible for the calling subscriber to rectify any error that may have been made by him or the operator in the details of the call and it makes it possible for him to give new instructions if the report he gets is such that he thinks that advisable. And another point is that with the old method, where the called subscriber was brought to his telephone before the calling subscriber was brought to his, placed on the called subscriber the burden of waiting, doing all the waiting. As a matter of fact, at least part of the

waiting and probably the greater part of it should be placed upon the calling subscriber, because he is the man who originates the call. But with this new system it means that neither subscriber waits on the other. They are both brought to the telephone at the same time.

Q. Had you something further on that?

A. No, that is all on that question.

Q. The saving that is computed on No. 4 as to overlap ringing is based upon the saving of equipment principally, reduction in amount of equipment and amount of equipment required?

A. Yes. The overlap ringing method has resulted in a reduction of per cent in the outward operator's work time and we get a corresponding reduction in equipment invest- [fol. 9454] ment and we also get a reduction of something over five per cent in the use of toll facilities, and this saving I have given is based upon those factors.

Mr. Shuler: Do you explain that saving in equipment to the engineers when they appraise property that is used and useful in rate cases?

The Witness: The point is we do not engineer as much equipment, we do not order as much equipment any more, due to the fact that we have this more efficient operating method. That is true with all of these savings.

Q. In fact, the same basis of computing your savings in this respect as that which you have noted in answering the other questions?

A. That is right. Now, in this particular method I can give you a little more information for the reason that this method is a very recent development. We introduced it in 1922 in the——

Q. Is it in general use?

A. Yes.

Q. It is the only method in use now by Bell Associated Companies?

A. It is one of the methods.

Q. Does the Ohio Bell employ this method entirely?

A. On all the traffic that we can apply the method on. For instance, on an appointment call we do not use the overlap ringing method because there is a case only of attempting to get the two subscribers together. We are going to tell him that Mr. Smith would like to talk at six o'clock.

Q. All of these savings you have testified to pertain to the Ohio Bell operation?

A. Oh, yes, they are all Ohio Bell, yes.

[fol. 9455] Commissioner Maullar: It is four thirty, Gentlemen. This case will be resumed Monday, the 19th. We will have two days then, Monday and Tuesday.

Mr. Burr: On Monday, the 19th, I may have another witness and with the consent of the Commission and the gentlemen on the other side we will put in his testimony between the cross-examinations.

Mr. Shuler: Can you tell us on what points he is going to testify, Mr. Burr?

Mr. Burr: I do not know yet. I have not talked to him.

And thereupon the further hearing of this matter was adjourned to Monday Afternoon, May 19th, 1924, at 1:30 o'clock.

. . . . . .

[fol. 9456] Monday Afternoon Session

May 19th, 1924.

And also EDWARD V. Cox, called as a witness on behalf of The Ohio Bell Telephone Company, being first duly sworn, testified as follows:

Examined by Mr. Burr:

Q. You may state your name?

A. Edward V. Cox.

Q. What is your age, Mr. Cox?

A. 50.

Q. Your residence?

A. Plainfield, New Jersey, near New York.

Q. Occupation?

A. I am employed by The American Telephone & Telegraph Company as assistant vice president.

Q. What has been your engineering education, if any?

A. Graduated from Sheffield Scientific School of Yale University in the year 1894 with the Degree of Bachelor of Philosophy and then entered the School of Mines of Columbia University, and the following year, 1895, graduated with the Degree of Electrical Engineer.

Q. When did you first enter the telephone business?

A. The summer of that same year, 1895.

Q. Have you been engaged in that business ever since that time?

A. I have been continuously employed by the American Company from that day to this.

Q. What was your employment with the American Company between the years 1895 and 1899?

A. I entered the plant work of the Company and had [fol. 9457] charge of installing subscribers station equipment and central office equipment, maintaining it, also submarine cables and the inspection of outside plant, some right of way work, very general experience in all phases of that outside and inside plant work. During that period I was employed under the titles of inspector and general inspector and assistant wire chief.

Q. From 1899 to 1907 what were your duties?

A. I was in the engineering department and there I had charge of design of apparatus and circuits. I had charge of the repair show which repaired not only the apparatus of the company but tools and equipment of all kinds. I also had charge of the design and also the field construction of all of the underground conduit work that was done by the company within those years. That included such long systems as between New York and Philadelphia, New York-New Haven, Boston-Providence, Chicago-Milwaukee.

Q. Now, from 1907 to 1911, you were special agent to the general superintendent of plant in charge of office management, I believe?

A. Yes, sir, that is right.

Q. What were your duties in that connection?

A. I had charge of seeing that the personnel of the office of my superior as well as the offices at other points was properly balanced, that they had the right men for the work. I had charge of the laying out of the procedures by which the various steps in the work should be accomplished. That included accounting as well as statistical work of all kinds involved in recording the work of that plant department.

Q. Succeeding that employment what kind of work did you do next?

A. I was next appointed chief accountant of the company. [fol. 9458] That was in 1911 and was right at the time when the Interstate Commerce Commission was making its investigation preliminary to establishing the Uniform System of Accounts, and I personally conducted a very large number of those negotiations, appearing at Washington and also

meeting the representatives of the Commission in various parts of the United States. Then, once the Uniform System of Accounts had been promulgated, I was in charge of the work of revamping the procedures of the telephone company to agree with that system. I had no charge at that period of the actual keeping of the accounts. It was what I like to think of as the engineering of accounts. It was determining the procedures and the best methods of accomplishing the results that were desired.

Q. Following that, what was your employment with the American Company?

A. For about a year I was general auditor in charge of the books of the general department, and then became a supply contract auditor with the duties of checking through the contracts and all phases of the supply program. That continued until about 1922 when I was appointed to my present position of assistant vice president.

Q. As assistant vice president what are and have been your duties?

A. These duties revolve around the supply work of the Associated Companies. They tie in fundamentally to the supply system furnished through The Western Electric Company. They are not confined to that system. I must know that the general supply contract is operating properly. If there is any way that I can improve it, why, I see that those recommendations are made. If there is any way [fol. 9459] that I can make it more advantageous to the Associated Companies it is my duty to do so. Beyond that, however, I go into the Associated Companies themselves. I do not stop with The Western Electric Company. I go into the companies themselves and follow their supply work so as to be sure, if I can suggest anything in the way of making their service more efficient and less costly, I shall make those recommendations to the company for their consideration. And I have had my men in this particular territory at least three times last year, and I think more, making trips of inspection and recommendations based on those studies.

Q. Are you in the employ of The Western Electric Company?

A. I am not, and I never have been.

Q. In the performance of your duties as assistant vice president, do you or do you not check the purchases by the

Associated Companies from The Western Electric Company?

A. Yes, sir, I do. The supply contract has, as one of its provisions, that the charges to the Associated Companies shall be uniform to them all, that is to say, they are at the most favored customer price, which necessarily operates that they shall be uniform as well as to be low. I check through my organization to see that those conditions are maintained in all parts of the United States. I also see that the prices which The Western Electric Company charge are reasonable as compared with charges, or prices, I should say, that can be gotten from other suppliers.

Q. Are you familiar with the relation existing today and which has existed between the Associated Companies, including The Ohio Bell Telephone Company, and The [fol. 9460] Western Electric Company?

A. Yes, sir, I am.

Q. Will you trace, if you please, the development of those relationships, commencing with the inception of The Western Electric Company?

A. The Western Electric Company in its inception considerably antedated the advent of the telephone. It had its inception in the firm of Gray & Barton in the year 1869. Gray was a very prominent inventor and Barton was a business man, and the firm was successful from the start. In the year 1872 the firm became The Western Electric Manufacturing Company. It manufactured at that time call bells and batteries and similar electrical devices of the period, manufactured the instruments used by The Western Union Telegraph Company, and it took over the shops of The Western Union Company at Ottawa, Illinois, and grew very rapidly.

Q. That was before the American Company had anything to do with it?

A. It was before the telephone was invented.

Q. Yes.

A. The Company grew very rapidly and at the time of the Centennial Exposition in 1876 the telephone was first presented publicly at that Exposition. The Western Electric Company had awarded to it at that same Exposition 50 awards for the excellense of its manufactures. In fact they were recognized as of the type equivalent to instruments today that——

Mr. McConnaughey: May I interrupt to ask what is the source of your information?

The Witness: It is from the Standard Works, Herbert Classon's History of the Telephone, One Man's Life, and [fol. 9461] so on.

Mr. McConnaughey: It is beyond your own personal experience?

The Witness: Oh, yes, this is gotten from general sources.

Mr. Burr: We do not insist upon it but I thought it might be interesting to have in the record here in a more or less condensed form a very short history of the early relations between The Western Electric Company and the trade in general and how the telephone business became allied with it.

Mr. McConnaughey: I don't know that I care to object to it but I just wondered what the source was.

Mr. Burr: It will take but a very short time.

The Witness: In 1877 the Western Union Company actively entered the telephone field in competition with the Bell Companies and the Western Electric Manufacturing Company manufactured the devices that were used by The Western Union Telegraph Company. There was a very bitter war between the Bell interests and the Western Union, and in 1879 the Western Union acknowledged the validity of the Bell patents and retired from the telephone field.

During all this period the Western Electric Company had been steadily growing. It had taken over the eastern shops of the telephone company and by 1880 it was the largest manufacturer of electrical equipment not only in the United States but probably in the world.

The period that I have just referred to, from 1876 to 1880, [fol. 9462] was one of tremendous activity in the development of auxiliary appliances to operate with a telephone. The Bell patents covered just the telephone instruments themselves, but in order to make those useful they had to be furnished with switchboards and substation call bells and all the various instrumentalities by which connections could be made between different lines.

There were a number of companies that were making these instruments and after The American Bell Telephone Company there were a number of companies authorized and licensed to manufacture telephones for it. Among those companies were The Western Electric Manufactur-

ing Company, Charles Williams of Boston, The Gilliland Manufacturing Company and Post & Company. These various companies also manufactured different kinds of switchboards. The types were changing so rapidly that there was no permanence at all to the system that would be installed at any time by any company. The situation was such that a company purchasing a switchboard could not tell whether it could ever add to it, it might be superseded so quickly. They could not tell whether they could get parts to maintain it because they might be abandoned.

The recognition of this uncertainty led to a consolidation of the more important of these manufacturing companies. The Western Electric Company, The Western Electric Manufacturing Company, from its preeminent position in the trade, naturally became the nucleus of this group, and Charles Williams and Post & Company and Gilliland [fol. 9463] Manufacturing Company were all ultimately consolidated into a new company known as The Western Electric Company.

Q. When was that?

A. In 1881 or 1882. At that time there were about 70,000 telephones in service.

Q. In the United States?

A. In the United States; and that will show the enormous rapidity with which the new invention took hold and will give some picture of the conditions that had developed in the trade through the effects of different manufacturers making different things and abandoning them. Then there had been a tremendously active patent work. The Bell interests had had some 600 patent suits that they had fought through, and this consolidation resulted in the control of the patents of all of these companies being consolidated. The result was that the best there was in the telephone field was all made available through the one source and an arrangement with the Bell interests at that time by which these devices manufactured by The Western Electric Company would be made available to all of the licensee operating companies at prices which would be not exorbitant or unreasonable; and there was no requirement at all that the licensee should buy of The Western Electric Company, but it had to obtain its sales by making its devices attractive to them.

There were still other companies that were manufacturing switchboards and similar equipment in competition with The Western Electric Company and the licensee companies had to determine for themselves where they would buy their goods. However, the excellence of The Western Electric [fol. 9464] Company's products was so marked that the operating companies actually did buy an increasing amount of their supplies from The Western Electric Company. That condition continued for some 19 years; in other words, from 1882 to 1901, the Bell operating companies purchasing the large proportion of their apparatus from The Western Electric Company. During this same period The Western Electric Company, as a convenience to its customers, went into the business of supplying other phases of electrical supplies which were needed in connection with the instrument which they manufactured and sold. That is to say, they would purchase from other suppliers wires and crossarms and pins and insulators, whatever was necessary, and would re-sell these to the various telephone companies, and the telephone companies each had their own purchasing agent and their own supply organization. But the convenience of dealing through The Western Electric was so great that during this period of 19 years the condition developed that a large proportion of the supplies they were buying were purchased from The Western Electric Company.

So that in that year 1901 one of the Bell operating companies, which I will call now the Associated Companies, The Bell Telephone Company of Philadelphia, considered this thing in a very thorough fashion and decided that inasmuch as purchasing and warehousing was not a primary function of telephone business and as purchasing and warehousing was a primary function of The Western Electric Company, and inasmuch as most of the supplies were to [fol. 9465] be bought through The Western Electric Company any way, this Associated Company took the matter up with The Western Electric Company to the end that The Western Electric Company would agree to take over the warehousing and purchasing functions of this company. The arrangement was entered into tentatively.

The first arrangement, as I remember it, was to the effect that the cost to the telephone company that first year should not exceed the cost to them of running their own

purchasing agent and supply organization for the prior period. Then the contract went through, with several other changes, to clarify it and to make its provisions more definite, and the other Associated Companies became interested in this matter, because it was successful from the start. The Bell Telephone Company of Philadelphia found it very advantageous and as these other companies took the matter up from time to time they became parties to a similar contract, so that gradually all of the Associated Companies became parties to what is now known as the standards supply contract. The predecessor of The Ohio Bell Telephone Company, The Central Union Company, was a fairly late comer into this arrangement. Its first contract was made in 1906. That was five years after the first contract was made.

Q. Going back for a moment to the manufacturing arrangement between The American Bell Telephone Company and The Western Electric Company, you have referred to some of the reasons for the entering into of that arrange- [fol. 9466] ment, and I think you have covered the surest source of supply at reasonable prices; and you also, I believe, have referred to the fact that these so many patents owned by the different companies became merged as to ownership in the one company; what have you to say on the subject of the close adherence to specifications, electrical and mechanical, which were hoped to be secured from the combination of these companies into one company?

A. The history of The Western Electric Company guaranteed that there would be close fidelity to specifications and that matter has been of increasing importance ever since because of the desirability of the interchangeable feature in telephone plants. It is constantly being shifted. As conditions change at one particular point, a plant that is outgrown there may be useful to some other company, and unless it is possible to utilize displaced equipment and coordinate it at other places, there is a very serious loss from having to entirely discard the item.

The feature of rigid adherence to specifications is important because in engineering the plant it is possible to assign a specific electrical condition to each element, and by the summation of these elements the exact characteristics of a circuit, whether it is one mile long or five miles,

can be worked out. That could not be done unless these items were all in close agreement to the specifications.

Q. What about the coordination of new and improved apparatus with the older apparatus?

A. That is a very important feature that I should have [fol. 9467] mentioned, because the ordinary manufacturer, when he develops some new feature that he feels is of great importance, takes particular care that it will not agree with what has gone before. You see that in the automobile industry so prominently now. It is to the interests of the manufacturer from a sales standpoint to make the new replace the old. That condition was absolutely met by this general arrangement that I refer to because as the new is developed it is made to coordinate with the old. An item of improved transmission or any other benefit or improvement is especially designed so that it can be made to work with the equipment that is already in use, and in that way it is not necessary to entirely discard the old in order to get the benefits of the advance in the art.

Q. On the subject of the freedom from exploitation by patentees, tell the Commission whether or not the vesting of the ownership of these patents in one company worked to create a monopoly of the business or whether it had some other effect?

A. There was absolutely no obligation on the operating companies to buy from The Western Electric Company unless the products of The Western Electric Company were justifying their position, justifying their price. There were other companies that were in the market and could have been utilized. I am not sure that I got that question just as you wanted it.

Q. I was thinking of the freedom from exploitation by patentees which resulted from the arrangement that you have described?

A. I think the situation can be seen from this fact. A [fol. 9468] central office of any considerable size is usually placed in a building that is designed for it. The result is that if you have a certain type in your plant it is vitally necessary that that should be not only the best thing that you can get, but that you shall know that thereafter you can add to it as new developments take place. The advantages of this contract lay right along that line because they did insure a market—I do not mean a market, but a source

of supply to the telephone companies of the best there was at a reasonable price, for that was required under the first arrangement made with the company.

Mr. Dotson: May I ask a question?

Mr. Burr: I am going to ask you to refrain, if you will, and at the close of the evidence we will give you all the opportunity possible for any questions.

Q. Did the arrangement result in the reduction of costs through increased volume or otherwise?

A. Very substantially, because the fact that these items were ordered by many companies enabled them to be made in larger quantities and the prices naturally decreased with increasing volume of production.

Q. What if any effect did the arrangement have upon the certainty or ease in ordering and installing apparatus of one sort and another?

A. The fact that these items were being made absolutely according to specifications, that they were standard, would enable an interchange of employes between different companies, between different parts of the same company, so that a man ordering an article could not only be certain [fol. 9469] that he would get exactly what he ordered but that it would fit without alteration or any change into the particular board where it was to be installed, and if he required additional help from some other locality it could be furnished and these additional employes would know exactly how to go to work because of the same design and the same features.

Q. In other words, it worked not only for a standardization of apparatus but standardization of methods which could be applied interchangeably by employes of different companies; is that right?

A. Yes, sir, it is.

Mr. Dotson: Just let the witness testify.

Q. What have you to say as to the effect of the arrangement in what we will call emergency cases, if you please?

A. The Western Electric Company has always kept in its headquarters available for instant shipment items that would be necessary in the case of substantial fire damage——

Q. Substantial what?

A. Substantial fire damage; shipments ready for instant shipment, and what they could keep as manufacturers for the whole Bell System is vastly greater than what any independent company could keep for itself. That feature is true not only with regard to the items which it manufactures but also with the supplies of all kinds. For example, each Associated Company has a Western Electric distributing house that looks after its particular needs, and these distributing houses are all placed at the strategic centers of transportation. The result is that the entire United States [fol. 9470] is blocked out with some 32 of these distributing houses, each of which is carrying stock for the telephone companies.

Q. And is owned by what company?

A. They are all owned by The Western Electric company. Now the entire stock held at all of these distributing houses is available for any one company in time of emergency.

Q. Now you only mentioned the matter of fire. Is the arrangement intended to protect against other emergencies as well as fire?

A. Exactly the same thing would apply to other types of emergencies, storms, floods or similar conditions.

Q. What office does The Western Electric Company perform in connection with displaced apparatus?

A. The Western Electric Company has an arrangement with all of the Associated Companies by which items of displaced apparatus which are no longer needed in the territory where they have been in service may be returned to The Western Electric Company for credit. They are sold back to The Western Electric Company. If there is still a demand for that type of apparatus the Western Electric Company will refuild it, and that rebuilt apparatus is sold at a sacrifice figure to any company that needs the supplies. There are certain types of apparatus that ought to be returned to the factory for repairs and those types as they are released for service go back into The Western Electric Company and may be repurchased by the very company that sent them in, or any other company, at this sacrifice figure. [fol. 9471] The arrangements for this entire activity as to pricing is this, any secondhand apparatus, regardless of its condition, is still secondhand, and in order to assure a market for it the price must be an attractive price. The price of this rebuilt apparatus is placed by The Western Electric Company at about 75 per cent of the value new. That is in

spite of the fact that the apparatus itself is at least 95 per cent as good as it was originally because the wearing parts have been entirely replaced.

Now from this 75 per cent price on resale is deducted the cost of this activity, and all that is left goes to the company for that returned apparatus. In other words there is no profit at all in the transaction to the Western Company. It is done at cost. Now there is over a million dollars of transactions of this kind that are done annually through The Western Electric Company today.

Q. Coming back, if you please, to the standard supply contract of 1901 and the benefits accruing from that contract, what have you to say as to its effect upon duplicate purchasing by the warehousing organizations? You have referred to them briefly, I think.

A. Yes. The first thing that happened when any company would make its supply contract with The Western Electric Company was that they no longer needed their purchasing organization and supply organization; they were relieved of that expense. But there is a secondary consideration that is fully as important, and that was that these supply organizations were no longer competing against each other, because when the prior condition existed, and particularly in [fol. 9472] times of emergencies, these various supply and purchasing agencies would compete for the available supply and prices would naturally soar.

Q. To the benefit of what company, if any?

A. To the benefit of any outside suppliers. The arrangement of The Western Electric Company absolutely prevented any such raising of prices at times of emergency.

Q. What effect did it have upon the amount of supplies carried for the Bell System?

A. It very greatly reduced it. As a matter of fact it more than cut it in half, because the main warehouses were practically eliminated. There must always, of course, in any telephone company, be local sources of supply. Each central office needs a certain stock of supplies to handle its own work. But the main central warehouses were eliminated. And yet that feature, as I already stated, did not reduce the protection to the telephone company.

For example, The Western Electric Company has at no time within the last few years had less than $16,000,000.00 worth of supplies on hand ready for immediate shipment. Of

course no telephone company could possibly have any such volume as that available. There was a still further protection in this way, the contracts which the Western Electric Company, through the enlarged volume of purchases, were able to make for its suppliers are so advantageous to the suppliers that they are willing to do everything in their power to give The Western Electric Company proper service. I [fol. 9473] know of many cases where they have run their plants night and day to meet special and emergency situations, which they would not have done for other customers.

Q. You are referring to articles made by other than The Western Electric Company but which are purchased by the Western Electric Company for the Associated Companies?

A. Yes, sir.

Mr. Dotson: I want to object to part of the former answers in which the witness has said he has known of occasions when they would have operated day and night to take care of an emergency requirement of the Associated Companies which they would not have done for other customers. That is what I want stricken out. It seems to me that that is going into——

Mr. Burr: Do you object to the words "which they would not have done for other customers"?

Mr. Dotson. Yes, sir.

Mr. Burr: Let them go out.

Commissioner Poor: Very well.

Q. What effect did the standard supply contract have upon the standardization in supplies?

A. It had exactly the same effect that the prior arrangement had with regard to items of apparatus, because there is such an obvious advantage in having uniform supplies that would therefore permit of larger orders that that followed as a matter of course.

The engineering department of The American Telephone [fol. 9474] & Telegraph Company developed the specifications to outline the most advantageous types of supplies and those being ordered by The Western Electric Company and made available to all of the Associated Companies at attractive prices, in spite of the fact that *that* they were particularly high-grade articles, resulted in their being ordered to the exclusion of cheaper, less serviceable goods.

Q. Did it result in any improvement in purchasing methods?

A. Very much so. No one company purchasing for itself could possibly afford to have experts in each line involved, whereas The Western Electric Company, purchasing in enormous volume, is able to have experts for every single line that is in question.

Q. Now you are referring now to articles and things purchased by The Western Electric Company from other manufacturing companies?

A. Yes, sir, I am. These are things that they do not manufacture but buy on the outside.

Q. Yes.

A. What I say with regard to purchasing could just as well be taken for the things they manufacture themselves, because their experts on paper must buy paper for their factory as well as paper for their Associated Companies in their ordinary use. However, the point is that, regardless of the line, the volume is so great that The Western Electric Company can keep continuously employed in that line a man who is an expert in it. Not only that, but they have back of all of this purchasing activity and underlying it an organization known as the purchase engineer's organization, which is a statistical and engineering group of employes who make it their business to be in touch with the underlying factors [fol. 9475] of production.

As an illustration of that, take the cost of paper, which I just mentioned. News print is the type of paper that is used in our directories and we buy in it enormous volume. The principal ingredient of that is wood pulp and that in turn is bleached with sulphur bleach. Now as the prices of wood pulp and sulphur change so they must ultimately be reflected in the purchased product. This engineering organization keeps in touch with all of those underlying activities. They study each article that is to be bought to find out what are the essential elements which go into it which will be reflected in its price, and changes in conditions, and they will give their purchasing agents advance information as to the expected price change. That enables them to buy ahead of the ordinary market changes, with a judgment that simply could not be had in any other way. They do not buy just on the surface tendency. They buy on the inherent underlying tendencies in the industry.

Q. What effect has the contract had on the matter of inspection?

A. That is quite similar to the purchasing, because no one company could keep an inspector busy on his own purchases. The man would have to cover different lines. He would have to cover different factories at different places. And the result is it would be expensive in traveling and so on, and the grade of work would not be particularly high. In contrast with that The Western Electric Company can keep its inspectors engaged at the source of production [fol. 9476] continuously on the line so that their experience and knowledge of their business is always kept at top notch and the expense of the inspection if reduced to a minimum.

Q. Has the adoption of the standard supply contract had any effect upon such matters as price reduction due to increased volume of purchases?

A. Yes, sir.

Q. Or improved credit or reduction in selling expense?

A. All of those features have operated incidentally in the same direction, to reduce the prices. The volume quite obviously does that. The manufacturer is able to keep his force continually employed. He does not have to shift them from line to line. He does not have to build up his force for a peak load and then let them go after he has been to the expense of training them, but he keeps them over long periods of time steadily engaged upon the same class of production. The manufacturer under those conditions is very glad to take a lower price, because even that lower price will mean more money to him than the other way of doing business.

Similarly, selling expense is eliminated because these orders that come to him are not now the result of elaborate selling expense on his part but they come to him through the efforts, through the normal channel of the telephone company to The Western Electric Company and then to him in large volume.

And the credit of The Western Electric Company is such that all bills are discounted. There is no provision for bad debts. There doesn't have to be. In fact, the first move [fol. 9477] that The Western Electric Company makes in approaching a manufacturer who is to furnish these supplies is that he shall immediately throw off all the selling expense and all his bad debt expense, because those are taken care of and he needs no provision for that at all. And that is actually done. So that the prices are naturally lower

than they possibly could be under the arrangement of each company buying for itself under regular competitive conditions.

Q. That is, the manufacturers consider The Western Electric Company's order equivalent to the money in hand at the time of the order?

A. Yes, sir, they do.

Q. What have you to say as to the improvement, if any, in the service under the contract?

A. Well, that is a corollary of what I have already said of the amount of supplies kept on hand and on the arrangement with the manufacturers. Back of the actual stocks held in supply by The Western Electric Company itself are these arrangements with these manufacturers, that they will at times of emergencies run their plant over time, that they will build up stocks. They frequently have large stocks on hand there to back up their shipments ultimately to come to The Western Electric Company. The advantage of that is just this, the stocks that come to the telephone company from The Western Electric Company storehouses bear a warehousing charge incurred by The Western Electric Company. If they are shipped direct from the manufacturer that warehousing charge is omitted and saved. The result is, if prompt service can be given it is cheaper [fol. 9478] to get the supplies there. This statement of course assumes transportation charges are properly equalized.

Q. What have you to say as to the interchangeability of supplies and the market for overstocks under the supply contracts?

A. The conditions with regard to overstocks or extra supplies which are of the kind not made by The Western Electric Company is analagous to those which The Western Electric Company itself manufactures; that is, they may be returned to the manufacturers; and their interchangeability in times of emergency such as storm or flood is such that men can be brought in from other territories or from other companies and can immediately go to work without instruction as to the detailed handling of these particular items.

Q. Is there a difference in the matter of protection in emergencies between the plan under the present contract and that outlined by you in the previous part of your testi-

mony when you spoke of the protection against emergencies?

A. I don't think I quite understand that question.

Q. Make it this way. You referred sometime ago to the matter of protection in emergencies and at that time you were speaking more with reference to the old arrangement between The Western Electric Company and The American Telephone & Telegraph Company?

A. Yes, sir.

Q. And I am now asking whether the situation is the same or is there any difference in the matter of protection [fol. 9479] in emergencies under the supply contract?

A. The same elements of protection are increasingly present through the increasing size and facilities of The Western Electric Company and its storehouses throughout the United States.

Mr. McConnaughey: Mr. Burr, may I ask you, are you talking about two different contracts here in different parts of this testimony?

Mr. Burr: No; in the earlier part we were talking about the old arrangement between The American Bell Telephone Company and The Western Electric Company which existed prior to the supply contract of 1901. Then I called the witness' attention to that contract and for some time he has been discussing advantages arising under that contract.

Q. There are one or two other things I wanted to ask you about that contract, Mr. Cox, and one is this; what effect, if any, has it had upon the obsolescense losses?

A. The effect on obsolescence losses is to reduce them in two ways. The effect, however, is much more noticeable in connection with apparatus than it would be in connection with supplies not made by The Western Electric Company. In case of apparatus obsolescence is minimized because the new and improved article is made to coordinate with the old that is already in service so that it does not have to be displaced. And on the other hand, when the time comes when it must be replaced, whatever salvage value there is available to it can be realized by that company or any other [fol. 9480] company that has need of it.

Q. I think you have already explained about the increased sources of supply which are available as the result of the arrangement. You will have some exhibits at a later point

showing how those supplies have been made available to different localities in emergencies?

A. Yes, sir, I will.

Q. Tell the Commission whether or not The Ohio Bell Telephone Company purchases from The Western Electric Company under a standard supply contract such as the one you have been describing generally?

A. Yes, sir, it does. In common with all of the other Associated Companies they have signed identical contracts.

Q. Do you remember when the contractual relationship between The Western Electric Company and The Bell Company operating in Ohio began?

A. That was in 1906.

Q. That was the contract between what companies?

A. Between The Central Union Telephone Company and The Western Electric Company.

Q. Has there been any change in the contract since that date?

A. There have been changes in *u*ts phrasing. It has been expanded and clarified and there have been some changes in the rates of remuneration to The Western Electric Company.

Q. Are you familiar with the contract under which The Ohio Bell Company is now making its purchases from the Western Electric Company?

A. Yes, sir, I am.

Q. Look at the compilation marked Standard supply [fol. 9481] contract and supplemental agreements between The Western Electric Company Inc. and the Associated Bell Companies and which, in the first page, purports to be the standard supply contract between The Western Electric Company and The Ohio Bell Company and tell the Commission whether or not that is an exact copy of the contract referred to?

A. Yes, sir, it is.

Mr. Burr: It may be marked for identification Cox Exhibit No. 1, and is offered in evidence.

And thereupon the Document above referred to was marked for purposes of Identification as Cox Exhibit No. 1 and was offered and admitted in evidence on behalf of The Ohio Bell Telephone Company and is herewith submitted and made a part hereof.

Q. Will you explain the working of this contract, Mr. Cox?

A. Briefly, this contract, first of all, provides that The Western Electric Company shall maintain store rooms and stocks for the particular benefit of the Associated Companies. Now the store room for this company is located in Cleveland.

Q. By this company you mean The——

A. Ohio Bell Telephone Company.

Q. Yes.

A. The next feature is that there is a division made between items which The Western Electric Company makes itself and those which it does not make but must purchase from some other suppliers. Sections 2 and 3 refer to this [fol. 9482] second group, those items which The Western Electric Company does not make. Now with regard to that group the provision of the contract is that the basic price to The Ohio Bell Telephone Company shall be net cost to The Western Electric Company. And net cost here is defined as the price after all discounts, allowances and commissions have been deducted.

Mr. Dotson: Where is that to be found?

The Witness: That is in Section 3, in the indented section.

Mr. Burr: Page 1.

The Witness: Page 1. Now, to these net prices there is added a service charge to compensate The Western Electric Company for the expense of purchasing, paying transportation on these articles, adjusting claims in connection therewith, storing, delivering and so on. That schedule of remuneration rates is defined in a subcontract which will be found headed Section 3 a little bit further on in the contract in its proper numerical order.

Mr. Burr: I would like to have it understood that not only the contract but the supplementary agreements which appear under the same cover and include Sections 3 to 7g inclusive are a part of Cox Exhibit No. 1.

Mr. McConnaughey: How about Sections 1 and 2?

Mr. Burr: 1 to 7g inclusive.

The Witness: The remuneration rates provided for items which The Western Electric Company does not manufacture but buys from some other supplier are shown in this [fol. 9483] subcontract covering Section 3, and, as you will observe here, they are dependent in their amount upon

whether the item is shipped direct from the manufacturer or whether the item is warehoused by The Western Electric Company. They are also dependent on the character of the item itself, because it is quite obvious that such a commodity as hard-drawn copper wire, which is almost invariably furnished in full coils, does not need as high a rate of remuneration as would apply on items of stationery which may be distributed a half dozen blotters at a time. So that there are these percentages for various classes and conditions, all based, however, on the net cost to the Western Electric.

Q. The net cost for this apparatus?

A. The net cost of supplies. That is what they have to pay the manufacturer.

Now coming to Section 4 of the main contract; on the first sheet of the contract we find that there are no obligations on the telephone company to purchase any article manufactured by the Electric Company. That is not only written in here in the contract but it is followed out to such an extent that while I don't know the exact amounts that are purchased for this company outside of the contract, I assume from analogy with other contracts it is about 10 to 20 per cent of the items which they purchase, because for those items it is possible for you to get just as good a price as The Western Electric Company could itself, because these are not items of such a nature as to permit national contracts from mill points. They may be small in volume or [fol. 9484] for some other reason they are not subject to grouping, and in that way The Western Electric Company cannot obtain any lower price than any other company can.

Q. If an Associated Company, such as The Ohio Bell Company, purchases apparatus under Section 4 from some other company than The Western Electric, does The Western Electric receive any payment or consideration of any kind on that account?

A. No, sir, not any.

Q. Very well.

A. Now, of the articles which The Western Electric Company makes itself, and those are all classed here as apparatus, the arrangement is that the telephone company is given the most favored customer price, and that is one of the obligations of the contract that I specially devote my own activities to ascertaining — actually is followed out.

The next important question under the contract is Section 7. That outlines a group of special services which

will be contracted for if the telephone company so desires, and as a matter of fact have all been contracted for by this company. For example, 7a covers the receiving, classifying, storing, issuing, carrying investment in or reissuing or disposing of any apparatus or supplies returned by the telephone company. That will be found covered by a special supplementary contract under 7a. Similarly on these other special services.

Q. You have heretofore referred to apparatus which might be returned under this clause before you?

A. Yes, sir, I have partially referred to that very pro- [fol. 9485] cedure. Now I do not think it is necessary at this time unless you desire it to go into further detail into the divisions of this contract, for those that have been brought out are the important phases of it. I might say that the compensation to The Western Electric Company for these special services is in very small proportion to the payments that they get for the direct sales of supplies of their own manufacture and the amount that they receive as representing the cost to them of supplies which they buy from other concerns. The bulk of the money represented by the contract is under those two divisions, not under special services.

Q. Will you give one or two examples showing that the Ohio Bell Company does not buy all of its supplies through The Western Electric Company?

A. Supplies that are purchased under emergency conditions. If a certain piece of work were required in some definite point from The Western Electric Company storehouse and it involved lumber or any supplies that were locally available, why, it would be manifestly uneconomical to buy this through The Western Electric Company, and they are just bought locally, building material, sand, stone, cement or building equipment house service supplies—by that I mean supplies that are required in the maintenance of engines and elevators and things like that—to some extent furniture—I don't know just to what extent in this company, but most of the companies have a considerable amount of special furniture which they do not buy from The Western Electric Company although certain standard lines are made available because office furniture can be [fol. 9486] obtained economically under national contracts

along certain definite lines. Automobile supplies, another very large item, for instance, tires; the tire is subject to deterioration in stock and The Western Electric Company does not stock tires. It would not be economical to the telephone companies if they did. So that those are generally purchased direct. Various items of stationery and special printing. Rest and lunch room supplies. And I think quite possibly different types of automobiles. There are some automobiles where The Western Electric Company has a national contract. There are others where there has not been a sufficient volume yet shown to justify a national contract, and if any company wants an automobile of that type, as I haven't any doubt that the Ohio Telephone Company has, they undoubtedly buy it direct without any relation to The Western Electric Company.

Q. Do you know of apparatus made by other companies than The Western Electric Company and which has been or is being purchased by The Ohio Bell Company notwithstanding similar apparatus is made by The Western Electric Company?

A. May I have that question again?

Mr. Burr: Read it. It is rather involved.

(Question read.)

A. I do know that in other years, I think it was only last year, certainly the year before, there were large purchases made by The Ohio Bell Telephone Company of equipment of concerns other than The Western Electric Company for strictly telephone purposes.

Mr. Burr: We won't go into that here because it has [fol. 9487] already been covered by another witness.

Mr. Dotson: I think then you better strike out what the witness says, because the statement as it now stands is quite broad and sweeping and yet it does not refer to a single definite thing and it gives you the benefit of that statement and puts us to a tremendous disadvantage. If he is not to testify to that, that ought to go out.

Mr. Burr: I think you will survive the disadvantage, Mr. Dotson.

Mr. Dotson: Well, I may lose some sleep and some appetite and I don't want to lose either. I think it ought

to go out in all fairness unless you want to pursue it. It is a statement of conclusion.

Mr. Burr: It is a question of fact.

(Question and answer read.)

Mr. Dotson: He could have answered that amply either yes or no.

Commissioner Maullar: Haven't you some——

Mr. Burr: We have specified several respects in which that is true, Your Honor, and I was merely asking for a general answer without taking up the time to go into detail again.

Commissioner Maullar: Can't the witness briefly state some of the things that were purchased?

Mr. Dotson: Mr. Burr is relying now upon the testimony of another witness. He says so. So why have anything from this witness on that point?

[fol. 9488] Mr. Burr: Isn't there such a thing as cumulative evidence?

Mr. Dotson: Yes, and it is objectionable when it is cumulated in this way.

Commissioner Maullar: I think this witness, if he knows of some purchase—the statement possibly that the purchases were made of that class of property is proper, but he might further detail it by stating a few of the things purchased.

Q. Can you specify some of the things so purchased?

A. I cannot put it in just that form, but I can state this, that two years ago I made a special inquiry along that line of The Ohio Bell Telephone Company and—that is, if it is proper—I was informed by the general auditor of the total amount of those special purchases, and as I recall the figure it was in the neighborhood of at least $50,000.00. It certainly was not less than that, probably a great deal more than that.

Mr. Dotson: We move to strike out the answer as it is based entirely on the statement of somebody else which is purely hearsay as a matter of fact.

Mr. Burr: It may go out.

Q. Do you know whether there are any other companies not controlled by The American Telephone & Telegraph

Company which operate under a standard supply contract or contracts similar to Cox Exhibit No. 1?

Mr. McConnaughey: I object.

Mr. Dotson: With whom, standard contract with [fol. 9489] whom?

Mr. Burr: With The Western Electric Company.

Mr. Laylin: That is objectionable.

Mr. Dotson: It is wholly immaterial.

Mr. Burr: It is very material because it shows that companies other than those controlled by The American Company consider the arrangement of sufficient value to avail themselves of it. There could not be any better evidence of the value of this contract than that.

Mr. Dotson: Why, Mr. Burr, I am surprised to hear that remark. There could not be better evidence! Why, there isn't any evidence as good as this contract, if it has any merit at all. Some other contract does not supply any merit to this contract.

Commissioner Maullar: I think the objection is well taken because you have no way of showing what it was that induced the other company to enter into the contract.

Mr. Burr: Let the record show that the witness, if permitted to answer, would say: "Yes, the Southern New England Telephone Company and The Cincinnati & Suburban Bell Telephone Company". Note our exception to the Commission's ruling.

Q. What class of commodities does The Western Electric Company sell and to what class of customers, if you know?

A. It has two major classes of commodities which it sells, those which it makes itself and those which it does not make. [fol. 9490] Now, of those which it makes itself they relate exclusively to the telephone business. You may see certain devices for household use, such as washing machines and so on, that bear The Western Electric Company name. However, those are not made by The Western Electric Company. Its entire manufacturing facilities are devoted to telephone supplies. Now that is one class. The other class is items which it buys and resells. Its classes of customers are several. It deals with the Associated Companies and it also sells in the general trade.

Q. To other telephone companies?

A. To other telephone companies and the United States Government, various domestic customers of all kinds who are interested in supplies that have relation to telephone work and similar electrical lines.

Q. Without going into the entire field, because it is a very large one, tell the Commission some of the articles which The Western Electric Company does not manufacture but purchases and resells either to the Associated Companies or others?

A. The items which it does not make are those which can be obtained from other manufacturers of satisfactory quality and at a satisfactory price. Those are all forms of pole line hardware, crossarms, braces and poles themselves, and crossarms and insulators and pins, items for which it is able to contract with the general manufacturing facilities of the country. The items which it makes itself are those where there is some inherent need of special accuracy or special skill, something which relates intimately to the giv- [fol. 9491] ing of telephone service. Those are largely patented devices.

Q. In purchasing supplies not manufactured by it does The Western Electric Company confine itself to isolated purchases or separate orders from an Associated Company or Associated Companies, or does it purchase in bulk?

A. The arrangements in general are these, each Associated Company prior to the first of the year has prepared an outline of the program which it proposes to conduct during the succeeding year. That is reduced to terms of material and The Western Electric Company is informed as to the amount of purchases which will come to it from these different sources. The Western Electric Company then arranges for the manufacturing facilities necessary to produce that volume of supplies at the times which it will be needed during the year. There are a series of reports which are made to The Western Electric Company to enable it to coordinate its supplies with the manufacturing program, so that the contracts which are made as a result of this information by The Western Electric Company are made on a national basis under competitive bidding for as long a term ahead as the conditions of the market will justify.

Q. Under competitive bidding by whom?

A. Competitive bidding of the suppliers of such calibre

that their product can reasonably be held to meet the requirements; that is, they can have confidence in advance that they will deliver under the contract.

Q. Have you prepared a statement showing the volume of the business of The Western Electric Company and [fol. 9492] how this volume is divided by classes of customers and classes of merchandise?

A. Yes, sir.

Mr. Burr: It may be marked Cox Exhibit No. 2 and is offered in evidence.

And thereupon the document above referred to was marked for purposes of identification as Cox Exhibit No. 2 and was offered and admitted in evidence on behalf of The Ohio Bell Telephone Company and is herewith submitted and made part hereof.

Q. Will you briefly outline the key to the exhibit?

A. This exhibit shows the total sales of The Western Electric Company, Incorporated, for each of the years 1918 to 1923 inclusive, and it divides these sales by classes of customers between Associated Companies and all others and it subdivides also by classes of merchandise, showing that which it manufactures itself, which is here designated W. E. merchandise, and that which it does not manufacture itself, which is here designated Merchandise not Western Electric.

Just to take one year as illustrative of the situation, for the year 1923, at the foot of the form, we have that The Western Electric Company sold of merchandise of its own manufacture to the Associated Companies $130,734,554.00, which represented 91 per cent of the total sales of its own merchandise. They sold to all others $12,908,936.00, which represented 9 per cent of their total manufactures; mak- [fol. 9493] ing a grand total of $143,643,490.00 of supplies made by them.

Now of merchandise not manufactured by The Western Electric Company it sold to the Associated Companies $55,234,303.00, representing 50 per cent of that classification, and the other 50 per cent was sold to others, as naturally follows.

Q. Have you information as to the total business in telephone supplies in the United States other than that of the Associated Companies; that is to say, that sold to the general trade?

A. Yes, sir, I have. The Western Electric Company sells supplies of its own make and supplies not of its own make in the general trade in competition with other supplies. Now of the total amount sold in the general trade by suppliers The Western Electric Company sells approximately 20 per cent of the apparatus, 40 per cent of the lead covered cable and 15 per cent of supplies not manufactured by The Western Electric Company, that grand total equalling something between 80 and 100 million dollars.

Mr. McConnaughey: That is what The Western Electric Company sells?

The Witness: No, that is the grand total sold by all concerns that are dealing with supplies that are of a nature to be used in the telephone industry.

Mr. McConnaughey: And of that 80 to 100 million The Western Electric Company sells 20 per cent of the apparatus that is included in that?

[fol. 9494] The Witness: Yes, sir.

Mr. McConnaughey: 40 per cent of the lead sheathed cable?

The Witness: Yes, sir.

Mr. McConnaughey: And 15 per cent of all the other you mention?

The Witness: Yes, sir.

Mr. McConnaughey: Can you tell what proportion of the 80 to 100 million that 20 per cent of the apparatus is?

The Witness: Yes, sir; it would be something like this; about 20 millions of apparatus and 3 millions of lead covered cable and say 70 million of other supplies—60 million, we will say, of other supplies.

Q. Are there included in this 80 to 100 million of supplies any supplies sold to the Associated Companies?

A. No, sir. I will have to qualify that, because there is in this way. Some of these independent manufacturers are selling supplies to The Western Electric Company for use by the Associated Companies and that is included in here. In other words, I have taken their output, taken the independent companies, the independent manufacturing companies' output, as it is, even though it may be some of it got into the use of the Associated Companies.

Q. What are the principal companies, if you know, which compete with The Western Electric Company in the sale of telephone apparatus to the general trade?

A. Those are principally the Kellogg Switchboard & [fol. 9495] Supply Company in Chicago and the Stromberg-Carlson Manufacturing Company of Rochester, New York.

Q. Do you know the prices charged by those companies?

A. Yes, sir, I do.

Q. How do you obtain them?

A. Both of these companies send me their catalogues, price sheets and discount sheets direct. That comes about from the fact that our companies buy more or less apparatus of these two companies and many of the sub-companies also buy from them and their catalogues and price list are available through all of these sources. As a matter of fact I get them direct.

Q. How often do you get them?

A. By applying for them.

Q. I mean how soon with reference to the date of their issue?

A. I have every reason to believe that I get them immediately. I am on their mailing list and they come promptly after the date they become effective.

Q. Have you made a study of the prices charged by The Western Electric Company in the open market and the competing prices of the other companies which you just mentioned?

A. Yes, sir, I have.

Q. Are the results of that study in the form of a chart?

A. Yes, sir.

Q. Who prepared it?

A. I did, or under my personal direction.

Mr. Burr: The chart may be marked Cox Exhibit No. 3 and is offered in evidence.

[fol. 9496] And thereupon the Chart above referred to was marked for purposes of identification as Cox Exhibit No. 3 and was offered and admitted in evidence on behalf of The Ohio Bell Telephone Company and is herewith submitted and made part hereof.

Q. Explain the chart, if you please?

A. This chart compares the prices of The Western Electric Company, The Kellogg Company and The Stromberg Company in the general trade over a period of years. It is prepared in this way. It represents first of all a fixed bill of goods. In preparing that bill of goods, please turn to

Sheet 2 of the Exhibit, you will see there in the lefthand column, under the heading "Western Electric Company, Incorporated", the sub heading, "General Trade". That is Column B, a list of items of telephone apparatus. Now those items—there are altogether 79 of them—were selected in this way. They represent first of all all of the important classes of telephone apparatus and they also represent leaders in those classes so that they are representative of the entire range of telephone apparatus manufactured by The Western Electric Company and sold to the general trade, and also sold to the Associated Companies. Now that list of items is also shown on the next page of the exhibit.

Q. That is Page 3?

A. You will find them listed under Column A of the third page of the exhibit. Now the next column shows the approximate total sales for the year 1922 which were made to [fol. 9497] the Associated Companies of this list of supplies.

Q. You are still referring to Page 3?

A. This is on Page 3, yes, sir. The subsequent columns represent a series of dates, January and July 1st for each year in succession, and this fixed bill of goods represented by these items and these quantities is priced as of these dates at the prices ruling at that period, at that time. The summation of these various columns shows the total of the bill and that is brought over on the first page of the exhibit under The Western Electric Company Incorporated and the corresponding date. Now the prices for the other two companies are obtained in exactly the same way.

Q. Where is it shown?

A. Refer back now to Page 2 of the exhibit. We have posted any item in Column B showing the Western Electric name the corresponding item supplied by the Kellogg Company; that is shown under Column C. Now these items, these substantially competing items were all designated to me by our engineering department without knowledge of what the prices were, simply with the requirements that they give the closest equivalent without unfairness to the independent manufacturing companies.

You have, therefore, in Column C the list of Kellogg items. And the same quantities that were used for the Western Electric prices and that in the fixed bill of goods is priced under the same dates in accordance with the prices of the Kellogg Company ruling as of those dates. Again

we take the summation of these prices for the different dates and carry them over onto the first sheet. The Strom-
[fol. 9498] berg-Carlson prices were obtained in the same way. So that we have at the foot of Sheet 1 a statement showing as of any particular date a comparable price for the same bill of goods as furnished by The Western Electric Company, the Kellogg Company and the Stromberg Company in the general trade.

The top of the first sheet shows prices in graph form.

Q. And shows the Western Electric prices generally higher than those of the other two companies?

A. Yes, sir, the Western Electric Company has been higher for the majority of the time.

Q. Going back to Page 2, I notice in Column A is a condenser No. 21D, and in Column C is condenser No. 16. Are those designations designations respectively of Western Electric and the Kellogg Company?

A. Yes, sir.

Q. It does not mean they are different kinds of articles but merely different designations used by the two companies for their own purposes?

A. Yes, sir, although the article itself is a substantial equivalent, it is not the identical article, as two pencils would be.

Q. But one is as nearly an equivalent of the other as is manufactured by the two companies respectively?

A. Yes, sir.

Mr. Burr: Let it be understood that Cox Exhibit No. 3 includes five pages, which may be marked pages 1, 2, 3, 4 and 5.

Q. Does the Western Electric Company make the same
[fol. 9499] charges to the Associated Companies that it does to the general trade for telephone apparatus?

A. No, sir. The prices to the Associated Companies are very much less than they are to the general trade.

Q. Have you made a study of the charges by The Western Electric Company to the Associated Companies?

A. Yes, sir, I have.

Q. Have you shown it so as to make a comparison between those charges and what the charges would have been for items and quantities as of the dates given in Exhibit 3?

A. Yes, sir.

Q. Is the chart marked Cox Exhibit No. 4, and consisting of a graph and a tabulation of figures marked Sheet 1 and a page containing columns of figures and a column of designations marked Sheet 2, the statement to which you refer?

A. Yes, sir, it is.

Mr. Burr: We offer Cox Exhibit No. 4 in evidence.

And thereupon the Document above referred to was marked for purposes of Indentification as Cox Exhibit No. 4 and was offered and admitted in evidence on behalf of The Ohio Bell Telephone Company and is herewith submitted and made part hereof.

Q. Explain this comparison, if you please?

A. The first sheet of this exhibit reproduces all of the first sheet of Exhibit 3 and adds to it the prices to the [fol. 9500] Associated Companies for the same fixed bill of goods under the same series of dates, the prices to the Associated Companies being given in the first column.

Q. To what bill of goods are you referring?

A. The same bill of goods that was given in Exhibit 3. It will be seen from this exhibit with the prices to the general trade by the Western Electric Company that the other competing manufacturers are very substantially higher over this entire period than are the prices of The Western Electric to the Associated Companies.

Q. When you refer to the bill of goods shown in Exhibit No. 3 you do not mean, do you, that the figures on pages 2, 3, 4 and 5 of that exhibit represent a single bill of goods ordered at one particular time?

A. No, sir, but as of any date, the same series of articles and quantities has been taken.

Q. Naturally he who runs may read, Mr. Cox, but in order to save some possibly close reading of these numerous figures, I will ask you whether or not the articles described in the first column on the lefthand side of Sheet No. 2 of Cox Exhibit No. 4 are the same as those described in the lefthand column of Page 2 of Exhibit 3?

A. Yes, sir they are identical.

Q. How nearly does Exhibit 4 reflect the price levels for all periods used by the Associated Companies, including the Ohio Bell Company?

A. It does very nearly because as the prices of these items rise and fall, so the prices of the related items in their

[fol. 9501] classes rise and fall. It will be the same not only for the Western Electric Company but for the other companies.

Q. And you have stated that The Western Electric Company uses two price lists, one for the general trade and one for the Associated Companies. Have you made a comparison of those two price lists?

A. Yes, sir, I have.

Q. Is it in statement form?

A. Yes, sir, it is.

Mr. Burr: The statement may be marked Cox Exhibit No. 5, Sheets 1 to 10 inclusive, and is offered in evidence.

And thereupon the document above referred to was marked for purposes of Identification as Cox Exhibit No. 5 and was offered and admitted in evidence on behalf of The Ohio Bell Telephone Company and is herewith submitted and made part hereof.

Q. Explain the exhibit?

A. The Western Electric Company sells items of telephone apparatus to the Associated Companies and also to the general trade.

Q. That is apparatus of its own manufacture?

A. Yes, sir, apparatus of its own manufacture, and it issues separate price lists for these two classes of customers. The price list to the Associated Companies is much larger because it contains a lot of items that are not sold to the general trade but reserved exclusively for the use of the Associated Companies. However, to the extent that there are common items on these two price lists they have all [fol. 9502] been compared as of the price lists in effect January 1st, 1924, and they are shown on this exhibit and the ten sheets comprising it. In each case the difference between the two sets of prices is determined for any article and then the percentage by which the price to the general trade is higher is determined.

Now the average situation disclosed by the entire exhibit shows that the prices to the general trade are 41.27 per cent higher on the average. However, the lowest differential existing in the entire list was 23.19 per cent higher than the price to the Associated Companies.

Q. That is, the price to the general trade was that much higher?

A. The price to the general trade was that much higher.

Q. What was the highest?

A. The highest was 400 per cent. Now there is one further point I wish to bring out here. The Associated Companies get the lowest price regardless of the quantities they use. If they purchase one of an item they would get exactly the same price as though they purchased the maximum quantities. That is not the case in pricing to the general trade.

Q. What is the case there?

A. Because there the pricing follows the normal for wholesale quantities and the pricing I have used in this exhibit is the lowest quoted price for the maximum quantity. In other words, if less than maximum quantity has been ordered the differentials would be higher than those shown here in this summary.

Q. What prices do you use for the general trade in Ex-
[fol. 9503] hibit 5?

A. I have taken in every case the price with the maximum discount off allowed.

Q. Under that arrangement unless the purchases by the general trade are in wholesale quantities what would be the effect of the differential in favor of the Associated Companies?

A. It would be higher than shown on this exhibit.

Q. Have you prepared a statement showing the sales by The Western Electric Company of telephone apparatus to the general trade since the year 1911?

A. Yes, sir, I have.

Q. Does that show the differentials between the price to the general trade and the price to the Associated Companies over that period?

A. Yes, sir.

Mr. Burr: It may be marked Cox Exhibit No. 6. It consists of one sheet. We offer Exhibit No. 6 in evidence.

And thereupon the document last above referred to was marked for purposes of identification as Cox Exhibit No. 6 and was offered and admitted in evidence on behalf of The Ohio Bell Telephone Company and is herewith submitted and made part hereof.

Q. How did you go at the preparation of this exhibit?

A. This exhibit shows for this series of years 1911 to

1923 the total actual sales to non-contract customers, that is, those which have not the benefit of the supply contract, [fol. 9504] and the amount of the sales for each year is shown in Column 2 at the foot of the form. Had those sales been made to the Associated Companies on the basis of the supply contract the amounts would have been as shown in Column 3 at the foot of the form. You will notice that in every case Column 3 is lower than column 2, and the amount of that difference is shown in percentage in the last column at the foot of the form, the last column to the right, the differential for the year 1923 having been 30 per cent.

Now the two studies of prices are completed in graph form at the top of the form. The upper line in the x'd area is the price for the general trade and the line immediately below it represents what the price would have been had the sales been made to the Associated Companies of the identical items and quantities.

Q. Does The Western Electric Company sell lead covered cable, underground and aerial cable to the general trade as well as to the Associated Companies?

A. Yes, sir, it does.

Q. How are those sales priced?

A. The prices to the Associated Companies are based on a price list and those to the general trade on the basis of quotations as the inquiry is made.

Q. What is the basis of the prices to the Associated Companies?

A. It is the most favored customer price.

Q. Have you prepared a statement showing the sales by [fol. 9505] The Western Electric Company of lead covered cable to the general trade since the year 1921 and what the differential between the price to the Associated Companies and the general trade has been?

A. Yes, sir, I have.

Mr. Burr: It may be marked for Identification Cox Exhibit No. 7 and is offered in evidence.

And thereupon the document above referred to was marked for purposes of Identification as Cox Exhibit No. 7 and was offered and admitted in evidence on behalf of The Ohio Bell Telephone Company and is herewith submitted and made part hereof.

Q. How did you prepare that exhibit?

A. This exhibit is entirely similar to Exhibit 6. In fact, it shows the actual prices which were charged to the non-contract customers and then the prices which the Associated Companies would have had to pay on the basis of the supply contract had they made the identical purchases. The price to the Associated Companies is substantially less and the differential for the year 1923 is shown to have been 17 per cent in favor of the Associated Companies.

Q. Do the Associated Companies, including the Ohio Bell Company, buy all of their lead covered cable from The Western Electric Company?

A. No, sir, they do not. It happens that there is a shortage of lead covered cable today, owing to the unprecedented demands of the Bell Companies and the fact that The Western Electric Company is erecting a new cable factory which [fol. 9506] will not be in operation until the latter part of this year. The New England Telephone & Telegraph Company is getting its proportion of the Bell System product but in order to expedite some of its program it is also purchasing cable from an independent manufacturer which is located in its own district, located near Providence, Rhode Island, and it is making substantial purchases and has for the last year from that company.

Q. That is The American Electrical Works?

A. The American Electrical Works, yes, sir. I have here a bill showing the situation with respect to those prices.

Q. How do they compare with the Western Electric prices?

A. They are substantially higher. For example, a contract placed under date of January 17th called for 251,500 feet of cable and the price for that f. o. b. Providence was $51,086.00. Had the Western Electric Company furnished that cable the price would have been $48,405.00 showing an increase to the American Electrical Works of 15.6 per cent.

An order placed on January 29th, 1924, calls for 308,857 feet. The price of that f. o. b. Providence was $74,821.00, and the corresponding Western Electric price would have been $59,908.00, showing an increase to the American Electrical Works of 24.89 per cent.

Q. Does the Western Electric Company sell supplies not of its own manufacture to both the Associated Companies and the general trade?

A. Yes, sir.

Q. You have already referred to that once, but I want [fol. 9507] to ask you whether there is any difference in the grade of those supplies sold to those two different classes of customers?

A. Yes, sir, there is. The Associated Companies purchase almost exclusively what is known as the specification grade. That is the grade corresponding to the specifications of the General Staff of The American Telephone & Telegraph Company. They buy that grade because there is the value there. It is just the difference between a long fibre wool coat and a shoddy coat. Now the general trade does not as a rule purchase that grade. They purchase a commercial article not as good, and these two articles are furnished by The Western Electric Company to its two classes of customers.

Q. I suppose companies other than the Associated Companies may buy according to the same specifications as those of the American Company, may they not?

A. Yes, sir, or the Associated Companies could buy of the cheaper commercial grade if they so desired.

Q. But in the latter case they do not?

A. But they do not care to do it because they do not get as much for their money.

Q. Have you made a study of the prices of The Western Electric Company for these two grades of supplies to the Associated Companies and to the general trade respectively?

A. Yes, sir.

Mr. Burr: It may be marked Cox Exhibit No. 8 and is offered in evidence.

[fol. 9508] And thereupon the document above referred to was marked for purposes of identification as Cox Exhibit No. 8 and was offered and admitted in evidence on behalf of The Ohio Bell Telephone Company and is herewith submitted and made part hereof.

Q. What is the basis for the comparison?

A. Now this exhibit outlines a number of different articles of this general class, and just to take the first mentioned article as an illustration, we have on the top line Bolts carried 3/8 by 4 inches, galvanized specification L3080.

Q. Whose supecification is that?

A. That is of The American Telephone & Telegraph Company, and the unit price of those is based on a 100 basis, and the price to the Associated Companies f. o. b. the Cleveland warehouse is $1.37.

Now the next line shows the commercial article bearing the same name but not of the specification grade and that is sold by The Western Electric Company in the general trade for $1.76. In other words, the Associated Companies get a better article for a price lower than the inferior article as sold in the general trade. And the same general situation exists throughout the system.

There are cases where the contrary is true. For example, take brackets, creosoted oak. You will notice the price under the specification is higher than the price to the general trade. In this case there is a very substantial difference in the quality. The general trade article represents [fol. 9509] the rejects and the culls from the specification product.

Q. What about the clamps shown in the next classification?

A. The same general condition is true of the clamps. The price to the Associated Companies for the specification article is higher than to the general trade but the general trade article has not the holding power nor has it got the same protection against rust because the galvanizing is inferior.

Q. What about the items of crossarms indicated by a d in parenthesis?

A. The Ranier grade arm is recognized as a cheaper arm by all suppliers. If the Associated Companies wish to buy these articles that are of the commercial grade and sold at a lower price in the general trade, the price to them would be substantially lower than that shown in Column D of this statement, but it is not to their interest to do it because they do not get the same value for their money.

Q. What about pins designated by E in parenthesis in the right hand column of figures?

A. Pins is another example of articles to the general trade, representing a large proportion of the rejects from the sepcification grade. The thread to take the insulator on these pins is very apt to be broken in the turning process and the American specifications are very rigid as to the application of those screw threads. The rejection is high and those come into this commercial grade, and the wood is in-

ferior too in the kind made up for the strictly commercial grade.

[fol. 9510] Q. In the case of rods, designated by F in parenthesis, in the righthand column of figures, what is there peculiar to that classification?

A. These are guy rods and the specification article is equipped with a special eye which makes the use of a thimble unnecessary. Rods sold to the general trade have the ordinary eye and a thimble is necessary and that naturally makes an additional cost to supply thimbles, but there is some danger of injuries in placing guys of that kind.

Q. You call them thimble guy rods in both cases notwithstanding the Associated Company article does not have thimbles?

A. That is a fact.

Q. Do the Associated Companies, including the Ohio Bell, buy from The Western Electric any class of merchandise not made by The Western Electric of a strictly commercial grade?

A. Yes, sir, it does.

Q. For example?

A. Well, stationery is a very good example of that.

Q. Is that a typical example?

A. Yes sir, it is. Everybody is familiar with stationery and it is used by all offices and it does not enter into service in the sense that one grade would give better transmission of conversations than the other. It is a totally different commodity.

Q. Have you made a study of the prices charged by The Western Electric Company for stationery in comparison with local quotations from wholesale dealers at the headquarters of The Ohio Bell Company?

A. Yes, sir, I have.

[fol. 9511] Do you refer to the exhibit marked for identification Cox Exhibit No. 9, Sheets 1 and 2?

A. Yes, sir.

Mr. Burr: We offer Cox Exhibit No. 9, Sheets 1 and 2, in evidence.

And thereupon the document above referred to was marked for purposes of identification as Cox Exhibit No. 9 and was offered and admitted in evidence on behalf of The Ohio Bell Telephone Company and is herewith submitted and made part hereof.

Q. Tell the Commission what you did in connection with the preparation of this Exhibit?

A. There are certain items of stationery which are used by all of the Associated Companies and are of such a nature as that the requirements for all can be combined and The Western Electric Company can go directly to manufacturers and make national contracts for this combined requirement. The items of this character which are used by The Ohio Bell Telephone Company are listed in this exhibit, and to see the effect of purchasing under this national contract basis as against purchasing on a local basis, I had the superintendent of supplies of an Ohio Bell Company write to four of the largest wholesalers in this line in the City of Cleveland, submitting this list and submitting the quantities, which represent a year's supply, and ask for their bids on that basis.

[fol. 9512] Q. Does Exhibit No. 9 cover a year's supply?

A. Yes, sir.

Q. Go ahead.

A. The lowest quotation from any of these four, from all of the four, is entered under Column C, and the amount of that price applied against the quantity as shown in Column D. Now the prices which the Western Electric Company had to pay its suppliers for these items is shown in Column E, and the amount extended against the quantity as shown in Column F. However, there must be paid by the Ohio Company to the Western Company a service charge for handling these purchases. That is applied here in summary at the foot of the form.

Q. Page 2?

A. That is on 2. You have the total of the two studies of quotations at the foot of the column, as follows:

You have, representing the lowest wholesale quotation, a total of $28,194.81, and the total of The Western Electric Company price $20,632.59.

Now to the Western Electric price must be added its remuneration at 10 per cent. The amount of that is $2063.26.

If the Ohio Company was not purchasing these supplies through The Western Electric Company but was purchasing them direct, it would incur expenses in doing so of warehousing and purchasing. I have taken the amount of expense in that connection as identical with that which it pays the Western Electric Company. Making these two additions we can get the total cost had the purchases been

[fol. 9513] made locally of $30,258.07, and the cost through the Western Electric Company would be $23,256.33.

Q. The cost to or the cost through?

A. The cost through the Western Electric Company.

Q. Yes.

A. That means an increase of $7,000.00 over the Western Electric Company if the purchases had been made locally and represents a 30 per cent increase. Now that is typical of the value of this wholesale purchasing by going direct and making those on national contracts.

Q. Have you made studies to determine for a period what the actual costs were to an Associated Company for telephone apparatus and lead covered cables purchased from The Western Electric Company as against what the cost would have been if similar purchases had been made from other suppliers?

A. Yes, sir, I have.

Q. Is one of the studies shown in Cox Exhibit No. 10, Sheets 1 to 5 inclusive?

A. Yes, sir.

Mr. Burr: We offer it in evidence.

And thereupon the document above referred to was marked for purposes of identification Cox Exhibit No. 10, Sheets 1 to 5 inclusive, and was offered and admitted in evidence on behalf of the Ohio Bell Telephone Company and is herewith submitted and made part hereof.

Q. Explain the exhibit, please, and explain why in this case you used The Cumberland Telephone & Telegraph Company in making your study?

A. The studies of this nature are made by me entirely. [fol. 9514] They are very expensive to make and I have made quite a number of them, the intent being to test out all sections of the United States and rotate over this territory from year to year. The study for the year 1921 and seven months of 1922 was specially requested by The Cumberland Company for their territory so I simply made that my study for the year, and while the study is completely explained on the first page of the exhibit I can give an oral explanation of it possibly better from the second page of the exhibit.

Q. The material appearing on the first page of the exhibit is of your own composition?

A. Yes, sir, it is.

Q. Taking up page 2, will you make a brief explanation of it, including the method of determining the competing items and selecting the lowest competing prices and application of discounts, and also how you arrived at the non-comparable items and estimated prices; there are also some other matters that might be explained, including the necessity of considering switchboards in detail by equipment furnished, and also the items of purchasing, warehousing and freight. I will be obliged to you if you will just briefly discuss each one of those five factors.

A. The study covers the prices actually paid by The Cumberland Telephone & Telegraph Company in the states of Louisiana and Tennessee for 1921 and seven months of the year 1922, comparing it with the lowest prices of competing manufacturers, and the competing manufacturers [fol. 9515] were taken as the Kellogg and Stromberg Companies.

In making a study of this kind it is impossible to take a completed switchboard and compare it with a switchboard of another concern. They are always made to specifications and they are built for a particular location so that there is no quotation that you can get from any other concern that would match with it. In order, however, to get a measure of the comparison in those cases I have had recourse to breaking down the switchboard into its elements. The apparatus going into the switchboard will represent at least 50 per cent of the total cost of the switchboard. The apparatus considered individually can be compared to a very considerable extent with the same items manufactured by other concerns. In finding out what should be the items used as substantially competing items, I had recourse to the same procedure that I have already explained, namely, furnishing our engineering department with a list of the items to be compared and then asking for their statement of the items manufactured by other concerns and which were the substantially competing items. The engineers did not know the prices paid in any case and they were under particular instructions to show no favoritism to The Western Electric Company in making the comparison.

Coming now to Column A in the detail of this Page 2 of the Exhibit, we have, under telephone apparatus, a subheading "Items compared", and 46 per cent of the items were found to be comparable.

The Western Electric prices for those items were [fol. 9516] $512,965.00. The lowest price of the computing manufacturers was found to be $594,089.00, showing a saving of $81,124.00, or 15.81 per cent. There was 33 per cent of the items which could not be compared.

Now in that case I made the assumption that if these items had been purchased from these other concerns the prices would have been exactly the same as if purchased from the Western Electric, so that you will see the amount of this $369,980.00 also shown as the lowest price of a competing manufacturer.

The Western Electric items were furnished in that year, the year of the study, as f. o. b. the distributing house. There are two houses in that territory, one at Nashville and one in New Orleans. The items, however, manufactured by the competing concerns are f. o. b. factories. The result is that there is a differential in the freight applying against the independent companies and that has been figured as $5297.00.

Q. Which factory is — Rochester?

A. Stromberg-Carlson.

Q. What at Zion City?

A. The Cook Electrical Manufacturing Company. If these items had not been purchased through the Western Electric Company but had been purchased direct the Cumberland Company would have incurred purchasing and warehousing expense. That is taken here at four per cent of the price of these items.

Q. Why did you use four per cent?

A. Because I think it is a conservative figure to use. And [fol. 9517] that amount is applied against the price of the lowest competing manufacturer. Summing up, therefore, for apparatus we find that the Western Electric prices actually paid were $882,945.00, and that the lowest price of a competing manufacturer would have amounted, with freight and purchasing and warehousing, to $1,400,683.00, an increase of $121,738.00, or 13.79 per cent.

Exactly the same procedure was followed for lead covered cable and the differential in favor of The Western Electric Company was found to be 19.04 per cent. It might be mentioned in the case of lead covered cable it is sold f. o. b. Western Electric Works at Hawthorne, near Chicago, and the competing factory having a deep water sea-

board at Providence was able to secure a lower freight rate and the differential was against the Western Electric in the case of lead covered cable.

Q. In the case of the telephone apparatus, in which the differential was 13.79 per cent, in favor of what company was that?

A. That is in favor of The Western Electric Company. Combining the lead covered cable and the apparatus, giving the grand total, we find that on a total of $1,138,753.00, there was a saving to the Cumberland Company of $170,449.00, or 14.97 per cent.

Mr. Gentsch: Before we get any further on this, I think it is apparent from this witness' statement that he has no personal knowledge of the facts covered by his testimony. It is purely hearsay; and I think it is also apparent from his testimony that there are so many elements lacking as [fol. 9518] to make his testimony, if it was of his own personal knowledge, incompetent. I want to move that all of this testimony be stricken out.

Commissioner Maullar: Mr. Gentsch, do you happen to know about his qualifications?

Mr. Gentsch: I know his qualifications.

Mr. Burr: You were not here to hear them.

Mr. Gentsch: This testimony would not be admissible in any Court, even in a Justice's Court. It does not have the first qualification of testimony—expert testimony. And if it is competent at all it comes in under the heading of expert testimony and it does not, from his own statement, have the first qualifications of expert testimony.

Commissioner Poor: He said these exhibits, I believe at least the major portion of them, were prepared by him or under his personal direction.

Mr. Gentsch: That is it exactly. That is one of the reasons for my objection.

Mr. Burr: That is true.

Commissioner Maullar: The objection will be overruled.

Mr. Gentsch: Note an exception.

Q. Have you prepared a similar statement for The New York Telephone Company, Mr. Cox?

A. Yes, sir, I have.

Q. Have you any statement of this kind for the Ohio Bell?

A. No, sir, I have never made any for this Company.
[fol. 9519] Q. Are you now referring to the sheet marked Cox Exhibit No. 11?
A. Yes, sir.

Mr. Burr: I offer it in evidence.

And thereupon the Document above referred to was marked for purposes of identification as Cox Exhibit No. 11 and was offered and admitted in evidence on behalf of the Ohio Bell Telephone Company and is herewith submitted and made part hereof.

Q. Does the same kind of an explanation apply to Exhibit No. 11 as to Exhibit No. 10?
A. Yes, sir. The study was prepared under the same rules of procedure and altogether will stand on the same explanation. The volume of purchase is very nearly 14 million, and the differential in favor of The Western Electric Company is 14.32 per cent.

Mr. Gentsch: The same motion.
Commissioner Maullar: Same ruling.
Mr. Gentsch: Note an exception.

And thereupon the further hearing of this matter was adjourned to Tuesday Morning, May 20th, 1924, at 10:00 o'clock.

[fol. 9520] Tuesday Morning Session

May 20th, 1924.

And thereupon the further hearing of this matter was resumed pursuant to adjournment.

Present:

Same counsel as at previous session, and Henry M. Hagelbarger, on Behalf of the City of Akron, and J. E. Kinnison, on Behalf of the City of Canton.

And also EDWARD V. COX, resuming the stand for further examination in chief, continued his testimony as follows.

Examined by Mr. Burr:

Q. At the close of yesterday's hearing I had asked you with reference to Exhibit No. 11, which was a study for

The New York Telephone Company, showing the actual costs to that company for telephone apparatus and lead covered cable purchased from The Western Electric Company and what the cost would have been if similar purchases had been made from other suppliers. Have you made any other similar studies of the purchases of the Associated Companies and have you prepared the results in chart form?

[fol. 9521] A. Yes, sir, I have.

Q. Is the chart to which you refer the one marked for identification Cox Exhibit No. 12?

A. Yes, sir, it is.

Mr. Burr: It is offered in evidence.

And thereupon the document above referred to was marked for purposes of identification as Cox Exhibit No. 12 and was offered and admitted in evidence on behalf of The Ohio Bell Telephone Company and is herewith submitted and marked Cox Exhibit No. 12.

Q. And I will ask you to explain the exhibit briefly, if you please.

A. This exhibit shows all of the studies of this nature that I have made. That takes them back to the year 1919. Studies shown here prior to that date were not made by me but I have reviewed them and have found that they are substantially on the same basis and accurate.

Q. Are they taken from the records of the company under your jurisdiction?

A. Yes, sir, they are.

Q. You may proceed.

A. Each study is just shown here in summary. The year that the purchases were made is shown and the company and the actual prices paid under the standard supply contract, and then the lowest prices at which these same supplies could have been purchased from competing manufacturers and the per cent saving under the Western Electric Company.

I might call particular attention to the study for the year 1921, The Illinois Bell Telephone Company, because the [fol. 9522] percentage there is out of line, the percentage saving is out of line. What happened in that study was just this. In drawing off the items purchased the error was made of not recording the date, and as a result of that

we were either faced with doing the whole work over or else adopting this method, namely, to assume that the lowest price of the competitors during any time in that particular year was the price equivalent for the price of the Western Electric item. Now that is not just the lowest price for one of these companies. It is the lowest price for all of the companies considered. And to show how unfair that is to The Western Electric Company, I need only mention that, for instance, in one case, the price of an item used in this study was put into effect in the last of December. It was only in effect four days. But that is the price that is used here, and against it are shown the actual prices which were paid all during the year by the telephone company to the Western Electric Company.

To get some measure of what this injustice to The Western Electric Company was, I analyzed the purchases, which amounted to $10,000.00 and over, and it showed there that the percentage 7.89 shown in this study was 5.07 too low. In other words, the proper percentage is probably more nearly 12 per cent than the percentage shown here.

Mr. McConnaughey: Mr. Burr, may I ask him to tell how that part differs from what is done in the other instances?

Mr. Burr: Yes, I would be very glad to have it.

[fol. 9523] Mr. McConnaughey: How does what you did in that 1921 Illinois Bell Telephone study differ from what you did in the other instances?

The Witness: The scheme followed in the studies I have explained in detail already was to take the purchase as of a given date and compare it with the prices of these other companies as of the same date, so that they are on actually as closely a comparative basis as we could make them, time by time, date by date, throughout the year.

In the case of this Illinois Company we failed to record the date and I did not feel it would be fair to take the average throughout the year for those conditions. And it certainly would not be fair to take any particular price. So I took the lowest. I gave them the benefit of that and took the very lowest in effect in the year. And there were many price changes in that year. In fact, in these studies from end to end I have done everything to be fair. If there was any doubt about an item I have said it was not an item that was comparable and therefore I have assumed the prices on either side would have been the same.

Q. What significance is there in the results of these studies with respect to the purchase of apparatus and lead covered cable by The Ohio Bell Telephone Company?

A. I cannot say without investigating the purchases of this company exactly what the savings would have been because the amounts of savings would depend on the dates of purchase, the amounts purchased, and so on, but it would have been of this same general nature. The percentage [fol. 9524] savings would have been substantial, and I have never made a study where they were not as this record shows here. The contracts are identical under which they make these purchases.

Q. Have you any studies of the purchases of an independent company?

A. Yes, sir.

Q. Showing what it actually paid for telephone apparatus and lead covered cable in comparison with what it would have had to pay for similar purchases from The Western Electric Company if purchased under the standard supply contract, as does The Ohio Bell Telephone Company?

A. Yes, sir, I have.

Q. How have you been able to make such a study?

A. A number of independent companies have been taken over by Bell Companies and the requirements of the Interstate Commerce Commission are that the essential data that went with these other companies shall go along with them. And the purchasing records of those come into the possession of the Bell interests and I have actually gone to those purchasing records, sent my representatives and have made studies from them.

Q. Is one of the studies to which you refer shown in the compilation consisting of five sheets marked for identification Cox Exhibit No. 13?

A. That is one of these studies, yes, sir.

Q. That is the one applying to the Citizens Telephone Company of Grand Rapids, Michigan, is it not?

A. Yes, sir.

[fol. 9525] Q. Who made that study?

A. This was made by me and under my direction. I sent a man to Grand Rapids, one of my own men, and he examined the purchasing records there, drew off the data and sent it to New York, where the rest of the study was completed under my immediate supervision.

Mr. Burr: We offer Cox Exhibit No. 13 in evidence.

And thereupon the document above referred to was marked for purposes of identification as Cox Exhibit No. 13 and was offered and admitted in evidence on behalf of The Ohio Bell Telephone Company and is herewith submitted and made part hereof.

Q. I will ask you to explain it briefly?

A. This list is analagous to that which I have explained in detail for The Chesapeake & Potomac Company—I mean The Cumberland Telephone & Telegraph Company, Exhibit 10, excepting that the situation is turned around; that is to say, the actual purchases were made by the independent company and the items purchased were compared with the manufactures of The Western Electric Company to see what could have been furnished by The Western Electric Company. If an item was actually purchased by The Citizens Company and The Western Electric Company did not have a substantially competing item, it is classed here as a non-comparable item and the Western Electric price is [fol. 9526] taken as the same as that actually paid by The Citizens Company.

On Page 2 of the Exhibit—Sheet 3 of the Exhibit, I should say—the summary is given. It would seem of telephone apparatus purchased the items compared amounted to 18 per cent of the purchases. It actually cost $41,755.00. The Western Electric ½rice under the standard supply contract would have been $37,319.00, showing $4436.00 higher than The Western Electric Company for the amount actually bought; and that was an increase of 11.89 per cent over the Western Electric price. The items not compared are shown and the freight is treated exactly the same as it was in the other exhibit. Similarly with the purchasing and warehousing. And lead covered cable also follows in the same way.

In summary, this study covered total purchases and freight and warehousing amounting to $236,950.00, and under the supply contract that would have been furnished by The Western Electric Company at a saving of $25,882.00, or 12.26 per cent.

Q. The figures under the column marked "per cent of total purcases" include the entire purchases, that is to say, 100 per cent, do they not?

A. It is not 100 per cent of the purchases of the company. It is 100 per cent of the items that were of the classifica-

tion analyzed here. In other words, they were outside plant items, stationery and all that kind of things that were not considered in the study.

Q. Yes. Is the data shown on page 1 of the Exhibit your own compilation?

A. Yes, sir, it is.

[fol. 9527] Mr. Burr: That sheet I think speaks for itself and inasmuch as the Commission and all of us are anxious to make time this morning I won't ask the witness to go through a repitition of those statements, if you will accept them as his statements.

Commissioner Poor: I want to ask Mr. Cox one question. As I understand it these purchases were made by the independent company from somebody other than The Western Electric Company. It does not show a difference in the price to the independent by The Western Electric Company?

The Witness: No, sir, you are correct. These purchases were made very largely from the Stromberg and Kellogg Companies. There were a few cases where they purchased Western Electric items. I think there is some Western Electric cable here. If they did, they purchased it on the general trade basis and would have been in competition with the other manufacturers, and it is taken as it stands as their actual purchases and it is priced against the price of the Associated Companies. There are very few, however, of those items in here.

Mr. Laylin: It seems to me that we ought to make the formal objection to this. I do not care to argue it, but it seems to me we ought to save our exceptions to this class of testimony inasmuch as it relates to circumstances and raises collateral issues here which cannot be tried in this case. We do not know as to these prices. We do not know anything of the surrounding circumstances involved in these purchases. [fol. 9528] And we simply want to note a formal exception.

Commissioner Poor: Do you object to this line of testimony?

Mr. Laylin: I do.

Commissioner Poor: It is overruled and exceptions may be noted.

Mr. Laylin: Note an exception.

Q. Have you made a similar study for the Kimloch Long Distance Telephone Company of St. Louis?

A. Yes, sir, I did.

Q. Is it shown in the exhibit consisting of five sheets and marked for identification Cox Exhibit No. 14?

A. Yes, sir.

Mr. Burr: It is offered in evidence.

Mr. Hagelbarger: I object to this testimony, if Your Honor please. I do not see how these cities can undertake to review testimony that has been gathered in this way. What have we got to do with Missouri? I cannot see for the life of me how the Commission can give any credit to such testimony, how it can bear upon this question, and I strenuously object to it. I wasn't here yesterday. I wasn't able to be here*m* but it occurs to me that we are taking a good deal of time upon something that apparently is put in in such shape that we cannot refute it. It would be futile for the Cities to undertake to chase around to Grand Rapids, Michigan, and St. Louis, Missouri, and to these other far-flung cities and localities and endeavor to find out what they [fol. 9529] paid for material, and if the Bell Company thinks it is driven to such extreme measures as this, why, God pity them.

Mr. Burr: Are we to understand that the Cities are driven to the same extreme measures because they have gone as far afield as Grand Rapids in order to find an expert for their purposes in this case?

Mr. Hagelbarger: Grand Rapids is not as far away as New York.

Mr. Kinnison: Wouldn't the competent way to prove this be to take the schedule of prices paid by The Ohio Bell and check it against the local market conditions?

Mr. Burr: We are coming to that next.

Mr. Kinnison: Wouldn't that be the only way to prove it?

Commissioner Poor: Of course that comes nearer to what we have under consideration here. If this is linked up in some way so as to make it admissible, it is proper. It will be admitted at the present time. If it is not linked up in some such manner it will be ruled out.

Mr. Gentsch: I would like to enter a formal objection to any and all of this testimony on another ground, that is this is not proper testimony which should be considered in a case of this kind at all. If there is any testimony which is admissible at all along this line and from this witness it seems to me that that must be confined to the question, not of comparable prices but of cost. It is in the testimony that

the A. T. & T. Company owns The Western Electric Com-
[fol. 9530] pany, and in line with the 107 Ohio State, a corporate fiction cannot be interposed to let them make a hidden profit out of their dealings with the Ohio Bell, and the only evidence which is competent here is evidence of cost,—not cost to the Ohio Bell but cost of production to The Western Electric Company. If, through the fiction of separate corporate identities, intervening corporations can come in, as The Western Electric Company is coming in here, and through that fiction profits can be derived indirectly by The A. T. & T. Company, it does not take very much of an imagination to come to a point where under no circumstances can any given rate, according to that kind of situation, be sufficient to make a fair and reasonable earning upon the real investment. As I see this proposition, The American Telephone & Telegraph Company, as the owner of the Ohio Bell and subject to the Public Utility Law, must be treated as identical with the Ohio Bell. And any items of expenditure which may be reckless in their waste or extravagant or showing a preference over and above what is fair and reasonable ought to be disregarded by this Commission in getting at costs; because the question which is here before this Commission is whether the rates in question are fair and reasonable rates.

Are the rates in question necessary in order to give a fair and adequate return on the investment in Ohio? If, through these fictions of separate corporate entities, profits may be surreptitiously obtained by The A. T. & T. Company, it just simply nullifies the object and intent of the [fol. 9531] whole utility law, and it seems to me that this whole line of testimony, even if it were based on facts which are here before us and which we could sit down and analyze, if we could get at the fundamental figures, could not be competent; but based as they are upon unknown quantities, unknown bases, we do not know what has been considered and what has been omitted. We all know how figures can be juggled and by an elimination of certain items from the study the face of the whole thing can be changed.

But the fundamental objection here is that The American Telephone & Telegraph Company is the owner of the Ohio Bell and any expenditures which the Ohio Bell makes, especially payments which are resulting indirectly in profits to the A. T. & T. Company, must be disregarded or the

whole structure of your utility law is going to fall. The whole object of it is evaded and subverted.

That this record may be kept straight I want to make the formal motion to strike out all of the testimony of this witness based upon these so-called studies as being incompetent, irrelevant and immaterial.

Mr. Burr: The entire argument of the gentleman on the other side proceeds upon the fallacious theory, Your Honor, that because The American Telephone & Telegraph Company has invested some of its money in The Ohio Bell Telephone Company and some of its money in The Western Electric Company ipso facto it is not entitled to a return on that investment.

Mr. Gentsch: No, no.

[fol. 9532] Mr. Burr: Now that is an absolutely fallacious theory.

Mr. Gentsch: No, no, we are not saying that at all, Mr. Burr.

Mr. Burr: Just a moment, please. We have heard a great deal about hidden profits and indirection and all that sort of thing in the public press lately. And the argument of the gentlemen on the other side smacks very strongly of some of the arguments which we have been reading. They are, however, none the less fallacious. And what we are showing by the evidence here today and what we showed yesterday was this, first, that the prices of The Western Electric Company to the Associated Bell Companies are in every case less than the prices for the same apparatus sold by The Western Electric Company to the trade generally. Certainly that is some justification for the arrangement whereby the Associated Companies purchased a large part of their supplies from The Western Electric Company.

The corollary of the proposition is equally true, that the independent telephone companies considered the Western Electric apparatus and supplies valuable enough to pay for those supplies and that apparatus more than the Associated Bell Telephone Company has paid for the same thing. That certainly is proof in itself of the benefit of the supply contract to the Associated Companies including the Ohio Bell Telephone Company.

As to this particular testimony under consideration now [fol. 9533] we are showing by it how much more it cost the independent companies to purchase supplies and ap-

paratus of the kinds shown in the exhibits in the open market than it would have cost them if they had had the benefit of the supply contract as the Associated Companies have. And there again the advantage of the contract, not only from the standpoint of its benefit to the Associated Companies but also the benefit which would have accrued through it to an independent company had it had the privileges under the contract, is clearly shown.

I do not care to take up a great deal of time arguing the question here. Your Honor did not hear some of the testimony adduced yesterday afternoon and I am sorry over that, but I think that the record will bear me out in what has been stated.

I may say also that the testimony of the prices, and all that which we are now offering, has been offered, admitted, received and commented on with approval by many Commissions in this country, and I know of no case in which any of it has been ruled out. That certainly is precedent for the manner in which we are conducting our case in this issue.

Mr. Gentsch: Just before we close the matter, I cannot let this go without just one further word. Let us look at the situation as it is here and as shown by the evidence before this Commission. The evidence before this Commission has shown, if it has shown anything, that is, the evidence brought out by the Bell Company, that the American Telephone & Telegraph Company has a virtual monopoly [fol. 9534] of the telephone business in the United States, and within the last four years they have been taking over one independent company after another until today but very few independent companies are in existence, and in another three or four years I do not suppose there is going to be one.

The very fact that Mr. Burr can stand up here and make the statement that he did a minute ago with reference to these contracts and this evidence shows the frame of mind and the security which the Bell people feel in their situation, that they have got this telephone situation in the palm of their hand and that all of us can just lump it if we don't like it. You have got a monopoly here and it is shown by their own evidence just as clear as a bell. You have an absolute, or a practically absolute monopoly of the telephone business in the United States owned by The A. T. & T. Company. And you have got these so-called subsid-

iary companies, which are owned by the Bell Company, compelled to purchase a great amount of their apparatus and supplies from The Western Electric Company, which is in turn owned by the Bell Company.

Mr. Burr: That is not so, if you will excuse me.

Mr. Gentsch: They have got a restricted market in which to buy. They have got not a word to say with reference to the prices they are compelled to pay. It is true that there have been precedents for this kind of testimony. They have built this thing up step by step, and because the matter has not been gone into thoroughly in a lot of these [fol. 9535] cases that they are now citing, in many cases the testimony has been, as the Court has said, very meager upon the question of the relationship between the A. T. & T. Company and these other companies, and they were compelled because of the meagerness of that testimony, to sustain the 4½ per cent contract. It has been because of the lack of testimony that that thing has gotten into the shape that it has and the precedents have been up to this time what they have. Where are your independent telephone companies in the State of Ohio today? They are practically wiped out, and what are not now wiped out will be in a year or two.

Mr. Burr: There are between four and five hundred.

Mr. Gentsch: You have got them in the hollow of your hand and you are going to take them whenever you want them. You know it and I know it.

Mr. Burr: Oh, that statement is not true and is not fair.

Mr. Gentsch: You have an entirely different situation on the manufacturing end in the last four or five years. When the Kellogg Company and the Stromberg Company and these other independent companies had a wide range of independent companies who could purchase their products they were in some shape to compete with the Western Electric Company. But what shape are they in today? They have got to eat out of the hand of the A. T. & T. Company and they have got to fix their prices as the A. T. & T. Company tells them to fix them, and unless they will fix their prices [fol. 9536] as the A. T. & T. Company tells them to fix them they have got to go out of business. What is there to prevent, when this monopoly becomes absolute, as it is going to become in a very short time—what is there to prevent a continual rise in prices here by The Western Electric Company until those increased prices are going to absorb

all of the earnings of the Ohio Bell and these other alleged subsidiaries throughout the United States and still leave nothing to be paid in the way of returns on the actual investment? It is coming to that just as sure as we are here.

It used to be that I could telephone from Cleveland to New Philadelphia for 35 cents. You can't do it for less than 80 now. Our telephones in the City of Cleveland used to cost us $72.00 a year, and my own office is costing now about $50.00 a month.

Commissioner Poor: I think you are getting a little far away from the argument on this.

Mr. Gentsch: I know, but——

Commissioner Poor: Let us don't get too far. We are on the question of the introduction of these comparative studies.

Mr. Gentsch: What I am trying to bring home to you is this, that there isn't anything in the world that is going to prevent the absorption of all of the revenues, no matter what the rate is, if this fiction is to be permitted to continue.

Commissioner Poor: I do not want to interrupt you but I think you are getting too far away from the point, which [fol. 9537] is on the question of the admission of this evidence.

Mr. Gentsch: Now just let me put this to you. The text books have laid down certain fundamental principles as to what constitutes a contract. There must be parties in the first place, not one party but two or more; they must be at arms length and there must be mutual considerations for the entering into of the contract.

Commissioner Poor: Now, Mr. Gentsch, I am going to interrupt you. We are not at the point of deciding right now with regard to the contract. What we are considering here is the reasonableness of the amount paid by the Ohio Bell to the A. T. & T. under this 4½ per cent contract. Now this testimony that is offered here, to my mind, has some bearing on whether that amount paid under that contract is reasonable or unreasonable. But to what extent the Commission may give weight to it as showing that, is another question. I think the line of testimony is competent——

Mr. Gentsch: Don't you see here——

Commissioner Poor: And your objection will be overruled.

Mr. Hagelbarger: Note an exception.

Mr. Gentsch: Note an exception.

Mr. McConnaughey: Note an exception for the City of Dayton and for all of the Cities.

Q. Mr. Cox, in order not to take any more time than is necessary, and referring to your statement that you have carefully been over all of these exhibits and you know their contents, will you tell the Commission whether or not the [fol. 9538] statements contained and the amounts shown in all of the exhibits so far offered are true and correct to the best of your knowledge and belief?

A. Yes, sir.

Mr. Dotson: We object to that.

Mr. Burr: If you want me to go——

Mr. Kinnison: His opinion can neither weaken nor strengthen the exhibit.

Mr. Burr: He has a right to say whether a statement is true, a statement contained in an exhibit is true and correct to the best of his knowledge and belief.

Mr. Kinnison: It is assumed when you put a witness on the stand you vouch for his integrity. If the man testifies that he collected those, his opinion as to the veracity of it would not enter into it.

Mr. Burr: You make it necessary for me to go back over all of the exhibits and interrogate him as to every figure and amount contained in them.

Mr. Laylin: Why interrogate him on that fact at all? He has testified to it.

Mr. Burr: He has testified that he has prepared these exhibits.

Mr. Shuler: He and his assistants.

Mr. Kinnison: He said the assistants in his own office.

Mr. Burr: The question is competent and has been asked over and over again.

Mr. Hagelbarger: He said he sent somebody to Grand Rapids and that somebody collected something up there [fol. 9539] and brought it back to him. How does he know whether it is correct or not? He is asking him if in his opinion it is correct. That is opinion evidence about a subject about which no Court would ever permit a witness to testify as to his opinion.

Mr. Kinnison: It is not subject to expert opinion.

Commissioner Poor: His opinion on the proposition

would not make it correct if it is not correct. There is no question about that. But if they were prepared by him or under his supervision he can testify as to the fact as to whether he believes they are correct and represent the figures under consideration——

Mr. Dotson: Your Honor, I think this question can be clarified by taking this view of it, that he is really being asked the question now that will require him to make just such answer as the Commission itself must make on this testimony that is brought in. It is for the Commission to determine the integrity of this testimony, how substantial it is, how reliable it is. Now his opinion cannot and should not in any manner effect the opinion and the consideration and the judgment of the Commission. Therefore no Court would allow it and we assume that we are entitled to the privilege of having the same tests given to the testimony at least at this juncture in this respect that would be given to it in Court. Now it is for the Commission to pass upon the strength, validity and worthiness of this testimony, not for this witness.

[fol. 9540] Commissioner Poor: There is no question about that, Mr. Dotson. But the way I interpret it, the effect of the question on my mind is whether the figures contained in the exhibit were correct figures.

Mr. Burr: To the best of his knowledge and belief. He is not asked for his opinion at all. It simply means this, that I will have to go back over the exhibit and take up the whole matter. I will have to take this item of $43,975,000.00 and ask him if that was the amount of sales of The Western Electric Company to the Associated Companies of Western Electric merchandise for the year 1918. His answer would be that it is.

Mr. Kinnison: His answer would be that it so shows from the records as gathered by his assistants.

Mr. Dotson: The objection then is as to form.

Mr. Burr: Alright, it will take all morning if they split that hair.

Mr. Dotson: The reason I object is that the form of the question gives too much latitude for this witness. This witness is in position to testify without being led.

Mr. Burr: Alright.

Mr. Dotson: We want the testimony to come from this witness, not from the attorney.

Mr. Burr: Alright, there are several thousand figures shown in these exhibits.

Mr. Dotson: There is a way of getting at it. You know how to get at it. I don't need to tell you.

[fol. 9541] Commissioner Poor: The way I interpret his question, he has said that they used a figure in here of 50 or 60 thousand dollars that was paid by a company for a certain period. The question is whether that represents a true figure. And as an offset against that they have said that if they had bought from somebody else it would have cost them $70,000.00. To that extent it is alright, I think. The question is asked him whether it represents true figures, whether they are correct figures, and not assumed figures, or something of that kind.

Mr. Dotson: We think the testimony ought to come in in some such shape as this; ask him what that figure represents. He can say that that figure represents the total sales of the Western Electric. Then ask him how did he obtain those figures, what is the source of those figures. He can tell what the source is from which he gets that data. This is as far as he can go. Not it is up to the Commission to determine how worth- is that testimony. He cannot say a word as to whether he thinks it is good or bad. That is not in his province. It is for him to give the Commission the source of these figures. If it comes in in that way, why I can readily see that they have furnished us with evidence that has some character.

Mr. Kinnison: Mr. Burr is asking his opinion as to the existence of facts.

Mr. Burr: I did not say anything about facts.

Mr. Kinnison: Opinion testimony cannot be given as to the existence of facts. He may draw his opinion as a [fol. 9542] conclusion from facts.

Mr. Dotson: I think that would be a very short examination, practically as short as the one that Mr. Burr has suggested—what those figures represent, what the source of his opinion is. He can tell that quickly and we are through with it. He knows. If he don't then he hasn't the knowledge of this stuff that he is producing here that I assume he has.

Commissioner Poor: Let us start all over again.

Q. Mr. Cox, so far there have been offered and admitted in evidence Cox Exhibits 1 to 14 inclusive, and those ex-

hibits contain many thousands of figures, quantities and amounts. Whose figures are those?

A. Some of those are completely mine.

Q. Yes.

A. They have been compiled from various sources. I have been back to the roots of the compilation. In the case of the sales figures for The Western Electric Company I cannot go back and examine their sales slips for millions of items. But I have myself taken the figures from their company reports for their own benefit to which I have access and which I have checked to the point of knowing that they represent proper accounting principles and to the further point that they are accurate and I have taken myself these figures of sales from those reports.

Now, on other matters I have had my assistants collect data for me. I have checked those from my knowledge of the general situation. I have checked computations to the point of knowing that they are reasonable, that they are [fol. 9543] accurate, and altogether I have gone as far to make these exhibits correct as a man possibly can in a busy business life.

Mr. Dotson: I object to that and move that it be stricken out. It is a matter of opinion as to whether he has gone as far as he could or not.

Commissioner Poor: It may go out.

The Witness: One of these companies here in the exhibits —we haven't come to that company yet.

Q. Have all of these figures been compiled either from records of The Western Electric Company or the Associated Companies or independent companies to which you have had access?

A. Yes, sir.

Mr. Gentsch: We object to that. He is asking him to say where they came from and he has already testified that he did not have personal knowledge about where a lot of them did come from. He says his assistants gathered together a lot of them. How do we know whether they made a correct abstract?

Commissioner Poor: If he knows where he told his assistants to go and examine them——

Mr. Gentsch: That is not the question.

Commissioner Poor: Why, I think it would be proper.

Q. Have you any knowledge as to the incorrectness of any of these figures?

Mr. Kinnison: I object.

Mr. Burr: I am asking for his knowledge.

[fol. 9544] Commissioner Poor: The objection will be overruled.

Mr. Dotson: That is not the right way, Mr. Burr.

Mr. Kinnison: Note an exception.

Q. Have you any reason to believe that any of these figures in any of your exhibits are incorrect?

Mr. Kinnison: I object. That is in violation of all of the rules of evidence. If a man has testified as to facts he cannot substantiate his testimony by giving his opinion as to the existence of facts.

Commissioner Poor: As I understand it he does not testify at this time that this is a fact. He is testifying to whether these figures are correctly taken from the sources from which they are taken.

Mr. Kinnison: He cannot do that because he has told how they are collected, through his assistants. That is the fact in itself. His opinion cannot strengthen it.

Commissioner Poor: There are certain things in the matter of compilation of figures and bookkeeping in large companies that no one individual could have personal knowledge of. In matters of this kind if we held it down to the man who actually took off the figures we would never get through any case.

Mr. Kinnison: I recognize that, Your Honor, but my belief is that his exhibits stand as correct until impeached by us. As far as that is concerned, they do not need to be supported by his opinion.

[fol. 9545] Commissioner Poor: I think you are correct about that.

Mr. Dotson: We will adhere to what we started out to do. If we confine ourselves to his testimony as to the manner or method or means by which he procured this information, and drop it at that, that is sufficient, because it is for the Commission then to determine how reliable that source of information is, and we are playing safe or playing within the limits of sound rules of evidence.

Mr. Burr: Just to get Mr. Dotson to stop, I will withdraw the question.

Mr. Dotson: Alright, that is an effective way to stop me after I have made the comment.

Q. Tell the Commission whether or not you arrived at the results shown in Exhibit 14 in the same manner and by the same method as those shown in Exhibit 13?

Mr. Hagelbarger: I object as leading.
Mr. McConnaughey: How did he arrive at it?

Q. As compared to the method used in arriving at the results shown in No. 13, what method did you use in arriving at the results shown in Exhibit No. 14?

Mr. Hagelbarger: I object.
Mr. Dotson: Why don't you ask him, how did you get your information set up in Exhibit No. 14?
Mr. Burr: I could do that, Mr. Dotson, but I am trying to shorten this inquiry because we have been asked to do it.
Commissioner Poor: The objection to the last question [fol. 9546] will be overruled.
Mr. Hagelbarger: Note an exception.
Mr. Burr: The Commission says you may answer.

(Question read.)

The Witness: We have followed the same program entirely.

Q. Calling your attention to the compilation marked Cox Exhibit No. 15, tell the Commission whether or not you made a similar study of the cost of telephone supplies to the Ohio State Telephone Company for the years 1919 and 1920?

Mr. Hagelbarger: We object and except.

A. We did.

Commissioner Poor: You may have it understood, Gentlemen, that your objection goes to all this same class of testimony.
Mr. Laylin: Yes, in order to save time.

Q. Is the study shown in Cox Exhibit 15, Sheets 1 to 5 inclusive?
A. Yes, sir.

And thereupon the Paper Writing above referred to was marked for purposes of identification Cox Exhibit No. 15.

Q. Explain the exhibit briefly?

A. This study was made of The Ohio State Telephone Company and covers the purchase made by it for the years 1919 to 1920 inclusive and this is of course the period prior [fol. 9547] to the taking over of its plant by the Ohio Bell Company.

The first page of this exhibit describes the study in detail and was prepared by me; but in summary, I will simply say that the total actual purchases, including allowances for freight on the purchases, amounted to $570,220.90; that these same supplies could have been purchased—these same supplies or their substantial equivalent could have been purchased by The Ohio Bell Telephone Company from the Western Electric Company under the standard supply contract for $496,770.23, showing that the prices actually paid were $73,450.67 higher than the Western Electric prices, which is 14.79 per cent higher.

Mr. Shuler: May I ask one question there, please?

Mr. Burr: Yes, Mr. Shuler.

Mr. Shuler: Mr. Cox, in this do I understand you figured freight and warehousing to the Ohio State?

The Witness: The freight wherever shown on their invoices is actual freight. If the freight is not shown it has to be estimated.

Mr. Shuler: If some of those supplies were delivered F. O. B. Columbus and you figured freight on those supplies, your estimate would be wrong to that extent?

The Witness: If that were so. But the invoices show whether they are F. O. B. or not.

Mr. Shuler: Will they?

The Witness: Yes, sir, they do.

[fol. 9548] Mr. Burr: We offer Cox Exhibit No. 15 in evidence.

And thereupon the Document above referred to was marked for purposes of Identification as Cox Exhibit No. 15 and was offered and admitted in evidence on behalf of The Ohio Bell Telephone Company and is herewith submitted and made part hereof.

Q. What is the source of the information shown in the study, Mr. Cox?

A. These are the actual invoices rendered by the suppliers against The Ohio State Telephone Company.

Q. Where did you have access to them?

A. The data is on file in the custody of The Ohio Bell Telephone Company and in this case the data was drawn off those records under my request by the General Auditor of The Ohio Bell Telephone Company. I furnished him the rules and the forms for preparing it and he filled them in for me.

Q. From what source have you secured the Western Electric prices used for comparison in this and in your other exhibits?

A. Those prices are taken directly from their price lists and where prices have had to be figured for other companies they have been taken directly from their prices of the same ruling date, whatever was involved in any particular comparison.

Q. How have you secured the prices of other manufacturers used in your exhibits from time to time?

A. By reference to their price lists and discount sheets, [fol. 9549] and in every case the maximum discount has been allowed.

Mr. Dotson: Have you made a personal check upon which you base the statement just made that the maximum discount rate has always been allowed?

The Witness: Yes, in this way. My authority for that statement is this. I receive direct from these principal companies that are involved in these studies, the Kellogg and Stromberg companies, their actual sheets, price lists and discount sheets. I have the full information so far as I can see that goes to one of their own agents in selling these goods. Now in order to ascertain whether those are the prices that are really used and that there was not some further scale of discount that I did not have access to I have checked these prices of these sales to independent companies, such studies as we have here, back against the price lists which I have covering those particular dates and I found they have priced them in accordance with those price lists or at higher prices. In other words, I have taken in my studies maximum discounts, and the actual prices charged a company such as the Ohio Bell Company have been no lower and often substantially higher.

Q. You mean the Ohio State Company?

A. Ohio State, yes.

Mr. McConnaughey: Never lower?

The Witness: There was one case where there was a special discount allowed. That was so special that I have not given it consideration here—an extra two per cent [fol. 9550] discount.

Q. Have you made studies of other independent companies and prepared it in chart form?

A. Yes, sir.

Q. Is the chart the one marked No. 16?

A. Yes, sir.

And thereupon the Document above referred to was marked for purposes of identification as Cox Exhibit No. 16.

Q. What is the source of the amounts and the data shown in that chart?

A. The data for Exhibit 16 was taken from studies all of which were prepared by me and under my immediate direction and supervision. It simply summarizes the studies of independent companies, three of which have been presented in the preceding exhibits and the others that were made at an earlier date. I might add at this point that the detail for the study for the Utica Home Telephone Company, covering the years 1905 to 1912 I prepared myself. In that case the invoices that were rendered by the suppliers against The Utica Home Telephone Company were filed, together with the paid check of The Utica Home Telephone Company. The whole information was all there together and it was a beautiful set of records, and I can testify that the showing that is made here for The Utica Home Telephone Company is correct from these original documents.

[fol. 9551] Mr. Burr: We offer Cox Exhibit No. 16 in evidence.

Mr. Gentsch: We object on the same ground heretofore stated.

Commissioner Poor: It is understood that you have your objection, overruled and exceptions, for the whole line of testimony, if the objection is on the same ground.

And thereupon the Document above referred to was marked for purposes of identification as Cox Exhibit No. 16 and was offered and admitted in evidence on behalf

of The Ohio Bell Telephone Company, subject to the above objection and exception, and is herewith submitted and made part hereof.

Q. Mr. Cox, thus far you have confined your testimony to the question of prices. Have you made a study of any other phases of the standard supply contract?

A. Yes, sir, I am very much interested in the matters of service and the matters of the amounts of supplies that the Company must carry in order to properly maintain its service intact.

Q. Have you made a study of that question?

A. Yes, sir, I have.

Q. What effect does the Western Electric contract have on the amount of supplies carried by the Associated Companies, including The Ohio Bell Telephone Company?

A. It reduces the amount that they would have to carry.

Q. How and why?

A. Because the central warehouses in which they stored [fol. 9552] their supplies prior to executing these contracts have been taken over by The Western Electric Company, and furthermore the possibilities of quick service by The Western Electric Company with numerous distributing houses is such that quicker service can be given with a still smaller amount of supplies carried by the individual exchanges of the telephone companies.

Q. How much of the stock of all of the warehouses of The Western Electric Company is available to any one company, to any one of the Associated Companies, in case of emergencies?

A. All of the warehouse stock is always available to any company that needs it.

Q. What does it amount to in dollars?

A. It has not been less than $16,000,000.00 for a number of years. It has been as high as $20,000,000.00 a number of times.

Q. What arrangements has The Western Electric Company with other manufacturers with reference to the service it secures for the Associated Companies from the outside manufacturers.

Mr. Gentsch: What manufacturers do you refer to?

Mr. Burr: Manufacturers of telephone apparatus or of articles which the Western Electric buys for the Associated Companies.

Mr. Gentsch: I was just trying to get at that particular branch of that you had in mind.

Mr. Burr: It goes to all of that, crossarms, and pins and stationery and all the other things that the Western Elec- [fol. 9553] tric Company buys for the Asociated Companies, things which are not of its own manufacture.

The Witness: The general arrangement is that the manufacturer guarantees to keep on hand——

Mr. Kinnison: Just a minute. Is there a contract on that with the other manufacturers?

The Witness: The Western Electric Company has contracts with each of its suppliers.

Mr. Kinnison: You speak of "the general arrangement." Do you refer to a specific contract?

The Witness: No, I am referring to the type of contracts. These contracts follow a definite line and one of the provisions of the contract is that they shall keep stocks on hand.

Q. Who shall keep stocks on hand?

A. In addition to those which The Western Electric Company has itself.

Mr. Gentsch: I want to ask that this be stricken out on the ground that it is not the best evidence. If there are these contracts in effect they are the best evidence.

Mr. Burr: We do not insist on the question.

Commissioner Poor: Proceed.

Q. Do you know the amount of supplies carried by independent telephone companies?

A. I know it as of certain dates.

Q. As of what date?

A. Each telephone company in interstate business has to make a report to the Interstate Commerce Commission, under oath, as of the 31st of December of each year. I have [fol. 9554] access to those reports and have drawn off information from them.

Q. Have you prepared an exhibit on the subject?

A. Yes, sir, I have.

Mr. Burr: It may be marked Cox Exhibit No. 17 and is offered in evidence.

Mr. Gentsch: We note the same objection.

Commissioner Poor: It is overruled.

Mr. Gentsch: Note an exception.

And thereupon the Document above referred to was marked for purposes of identification as Cox Exhibit No. 17 and was offered and admitted in evidence on behalf of The Ohio Bell Telephone Company, subject to the above objection and exception, and is herewith submitted and made part hereof.

Q. Will you look at Cox Exhibit No. 17 and explain the method which you have followed in drafting it?

A. This exhibit lists the independent companies. I have taken all of the independent companies which have no contract with the Western Electric. And they are the Class A companies under the classification of The Interstate Commerce Commission. I believe that that requires their annual revenues shall be $250,000.00 a year or greater. The figures shown for each company are taken from those reports, that is to say, the total number of stations is reported and the total amount of material carried in the supply ac- [fol. 9555] count reported and I have divided one by the other and gotten the supplies per station.

Q. That is how much?

A. The average of this entire list is $3.69 per station. I might call attention to an item there that is interesting. The Johnstown Telephone Company only has 14 cents shown in its annual report as a per station figure for supplies. It was an interesting figure and I wrote the President of the Company to get some more information on it. His reply was to the effect that they charged their material directly to the final accounts on purchase, and this represented a few odds and ends as to which they had no idea what they were going to do with them, and it was not representative of the amount. However, inasmuch as it came in the list I have thrown it in there on the figure shown in the Interstate Commerce Commission report.

Q. Do you know the amount of the supplies of The Ohio Bell Telephone Company?

A. That, corresponding to this same year and date, was $2.08.

Q. What bearing has the amount of supplies carried by The Western Electric Company on the amount of $2.08 for supplies carried by The Ohio Bell Telephone Company?

A. If The Western Electric Company did not have this contract with The Ohio Bell Telephone Company they undoubtedly would carry more supplies than they do. I

assume that they probably will have to carry, instead of $2.08—they will probably have to carry $1.50 additional.
[fol. 9556] Q. Per station?

A. Yes, per station. Say in the neighborhood of $3.50.

Mr. Gentsch: We ask that that answer be stricken out.

Commissioner Poor: It is a matter of speculation and it may go out.

Mr. Burr: Well, this witness, Your Honor, qualified yesterday as an expert on the question of supplies for all of the Associated Companies.

Commissioner Poor: Well, there are so many things that go into the consideration of what they would carry, Mr. Burr, that I think the matter is very indefinite. Go down this list and you will find the different companies carrying different amounts.

Mr. Burr: Well, save our exception.

Q. What services, if any, does The Western Electric Company render to the Associated Companies in times of emergencies?

A. Well, they are very conspicuous in their services then because their organization permits them to function in that way and every effort is made to meet their obligations. There are outstanding occurrences of that kind that are continually happening.

Q. Give some illustrations.

A. Go back to the Baltimore fire, the San Francisco fire and the very serious floods in this section here at Columbus in 1913 and continuously recurring damage from storm in the way of sleet, tornado and so on.

Q. Explain some of the services rendered by the Western [fol. 9557] Electric in connection with those causalties?

A. Well, to take a recent occurrence, I would mention the fire that destroyed the building and telephone exchange at Medill, Oklahoma. That is 900 miles west of Chicago. This fire took place on December 18th last. There was a day lost in determining the new location.

Q. Of what?

A. Of the exchange. The way the new location was determined, the requirements for the exchange were telephoned to Hawthorne.

Q. What is Hawthorne?

A. That is the manufacturing headquarters of The Western Electric Company. Now instead of going to the

point of patching up service, it was possible, owing to this Western Electric Contract, to go ahead right to the permanent installation and save a lot of preliminary expense.

Mr. Kinnison: I object to this. This does not prove the contract of the Ohio Bell, what happened in Oklahoma or some place else.

Q. I will ask you whether or not the Western Electric——

Commissioner Poor: I do not see that it has so very material a value in this case except to show that they claim that the readiness to do this has a value.

Mr. Kinnison: It would be rather inchoate I think.

Mr. Burr: It is a very substantial value, and while we all hope that these storms and fires will not occur in the State of Ohio, we nevertheless know that in a given period they [fol. 9558] are bound to happen; they do and have happened here. Our experience has shown that they do happen. It seems to me that we should not deprecate the testimony of the witness just because he is not picking out some recent storm in the State of Ohio.

Mr. Kinnison: The history of Ohio would show the worth to the Ohio Bell of this feature.

The Witness: Shall I finish that answer?

Mr. Burr: May we proceed, Your Honor?

Commissioner Poor: What is the question?

Mr. Burr: We were still at Medill, Oklahoma.

Commissioner Poor: I think he may answer.

Mr. Kinnison: Exception.

The Witness: On the arrival of this information at Chicago, the design in complete specification detail of the new installation was prepared. It involved day and night work.

The installation involved seven sections of switchboard, chief operator's desk, wire chief's desk, power plant, and of course all of the cable and so on, to complete the installation. The filling of the order was rushed in the same fashion and the boards were shipped by express to Medill, Oklahoma. At the same time a force of 30 installers was assembled at that point. Now this fire, as I said, took place on December 18th.

On December 25th that board was ready for service. Now that was a substantial advantage, not only to that company but to the community which was served by the switchboard.

A very similar instance occurred in the preceding year, in [fol. 9559] March, at Cheboygan, Michigan.

Mr. Kinnison: I object to the testimony as to the Michigan plant.

Commissioner Poor: It is overruled and you may have an exception.

The Witness: There were six sections involved at that point and the auxiliary apparatus in the same fashion. It was five days from the time of that fire until the board was not only installed but 50 per cent of the subscribers were actually working.

That sort of service cannot be rendered unless you have an organization like The Western Electric Company behind the telephone company that is involved, and it is just as liable to come in the State of Ohio as it is in any other State of the Union.

Mr. Kinnison: I move to strike out the answer.

Mr. Burr: That last sentence may go out.

Mr. Dotson: As a matter of information, how many stations did the Medill, Oklahoma, exchange have?

The Witness: I cannot answer that specifically. There were four sections of toll board. There were two sections of farmers' lines, and then there was one section of local subscribers' boards.

Mr. Dotson: It is what you would consider a small exchange?

The Witness: Oh, yes.

Mr. Dotson: Is the same thing true of the Cheboygan, Michigan, exchange?

[fol. 9560] The Witness: Yes, sir.

Mr. Kinnison: Do you have any similar instances in Ohio?

The Witness: I know of none.

Q. Do you know of the flood which occurred in this vicinity?

A. Yes, sir, I do.

Q. Do you know anything about the work done by The Western Electric Company?

A. I know that supplies were poured into this territory from the distributing houses that surround the area and in that way the supplies were on the ground more quickly than could possibly have been furnished through any other arrangement.

Q. Have you made an investigation of the services of The Western Electric Company in connection with sleet storms?

A. Yes, sir; I had occasion to make investigation only last month on a very serious storm that went over the Eastern Seaboard.

Q. Describe it briefly?

Mr. Dotson: I object on the same ground.

Commissioner Poor: Overruled.

Mr. Dotson: Note an exception.

The Witness: This storm took place on March 10th to 12th. It started in in Western Pennsylvania and West Virginia and continued eastward and finally struck the New England States at the last of the dates mentioned.

The first company to suffer seriously was The Chesapeake & Potomac group which operates West Virginia and Virginia and around Washington.

[fol. 9561] Q. Formerly extended into Ohio, didn't it?

A. I don't know to what extent damage was done here.

Q. I mean the Chesapeake & Potomac lines formerly extended into Ohio, did they not?

A. I cannot answer that. Washington would have been isolated if it had not been for the cable circuits going underground between Washington and Philadelphia, and in order to ascertain the extent of damage and make plans for the relief of the territory west of Washington communications had to be routed through Chicago and New Orleans and Atlanta. I happened to be in Washington at The Western Electric Company's distributing house there the seventh day after that storm. That was on March 18th that I was there. They had already shipped to the storm area these quantities of supplies——

Q. Shipped where?

A. Shipped to the telephone companies for the repair of this storm damage.

500,000 pounds of bare copper wire; 12,000,000 feet of twisted pair wire; 8,000 pounds of tie wire; 100,000 sleeves for connecting up the line work; 10,000 poles, and 2,500 cross arms.

When a storm of that character occurs roads are blocked and of course the service is destroyed. The first conditions that the telephone company must meet are the restoration of the roads and service and in order to do that it is done in a very temporary fashion. This twisted pair wire which is shown as having been shipped to the extent of 12,000,000 [fol. 9562] feet is a very important item in that respect

because that can be connected in at the good ends of the break and just simply strung along the fields or in the road and service given in that way.

In order to get a measure of what this damage meant in the way of supplies furnished I had recourse to the estimates which this company had furnished The Western Electric Company in January preceding showing that their annual requirements were going to be, and their best estimate for the year 1924.

Mr. Gentsch: May I inquire, do you mean the A. T. & T. Company?

The Witness: No, this is The Chesapeake & Potomac Telephone Company. I found that these annual estimates and the quantities shipped on this particular storm bore this relation to each other:

Of the bare copper wire shipped, 50 per cent of their annual requirements; of the twisted pair wire, 58 per cent; of the tire wire, 53 per cent; of the sleeves, 50 per cent; of the poles, 60 per cent; of the cross arms, 10 per cent.

And at that time there were 25,000 stations out of service and the estimated expense of repairing this damage amounted to $750,000.00.

However, that was not the only point that was involved in damage, because The Bell Telephone Company of Penn- [fol. 9563] sylvania and The New York Telephone Company were also involved in it. But, as usually happens in the case of sleet storms, there may be quite a difference in the extent of damage due to the amount of sleet that is formed on wires and the loss was not so severe in their territory.

However, these amounts of supplies were shipped to those companies; that is, for the States of Pennsylvania, New York, Connecticut and New Jersey:

Bare copper wire, 744,000 pounds; twisted pair wire, 9,000,000 feet; tire wire, 3,000 pounds; sleeves, 303,000; poles and crossarms are not reported.

Now The New England Telephone & Telegraph Company operating in the New England States exclusive of the State of Connecticut came in at the end of this period. They got the storm last and it was severe in their territory. The damage there amounted to over $900,000.00, and the stations out of service were 67,706.

I made a study and found out the service which The Western Electric Company had rendered to The New England Telephone & Telegraph Company. I found that they

had shipped as emergency needs the week following this storm the following amounts of material:

Bare copper wire, 151,000 pounds; twisted pair wire, 15,000,000 feet; tie wire, 2,000 pounds; sleeves, 189,000; [fol. 9564] poles, 1000; cross arms 6000.

In that case also I reviewed the requirements which The New England Company had given the Western Electric Company as their probable use for the year 1924, and I found that the relation to the emergency shipments was as follows:

Bare copper wire, 37 per cent of the annual requirements; twisted pair wire, 30 per cent; tie wire, 27 per cent; sleeves, 26 per cent; poles, 4 per cent; crossarms, 5 per cent.

Now there are two things that are very prominently to be noted in this connection. First of all, the amount of supplies could not have been produced had it not been for the arrangement such as The Western Electric Company has.

Mr. Dotson: Your Honor, that statement, it seems to me, is subject to objection—"could not have been procured without such a contract."

Mr. Burr: He did not say without the contract.

Mr. Dotson: Read it. I want it corrected understood.

(Answer read).

Mr. Dotson: I am substantially correct.

Mr. Burr: That is not the contract at all. That is the [fol. 9565] arrangement for keeping supplies at different points for use in emergency.

Mr. McConnaughey: Under the contract.

Mr. Dotson: That is what you claim for it.

Mr. Burr: They keep them whether it is under the contract or not.

Mr. McConnaughey: If it is not under the contract it is not here.

Mr. Burr: We do not insist upon it.

Mr. Dotson: Then let us have it out.

Mr. Burr: Take it out.

The Witness: The Western Electric Company is the largest supplier of these lines in the world and these companies were enabled to get this prompt service by dealing with that source of supply. Furthermore, they were not in competition with each other. Here were five companies that were involved and if they had all had their own pur-

chasing organization they would have all been competing against each other under conditions of emergency and the prices of these items would have been high and the service would have been very uncertain.

Mr. Dotson: I am very much impressed with what you are saying because of its peculiar character. But it is really arguing the case. It is not testimony in its nature at all. He is arguing to this Commission the very point that he ought to be making by the testimony. I object to it because of that. It is just the very thing that a lawyer would say to the Commission if presenting a case in argument. I think [fol. 9566] his comments are objectionable. He has stated the facts, what he did, and that is sufficient. The rest of the matter is argument.

The Witness: The prices which were paid for all of these supplies were those that applied under the contract, that is to say, the cost to The Western Electric Company plus the service charges to which we have already referred in the evidence. There was no increase due to the fact that this was emergency service; and the supplies were available and were shipped as needed.

By Mr. Shuler:

Q. Were there any independent companies in that territory, Mr. Cox?

A. Yes, sir.

Q. Do you know anything about how soon they were in service?

A. I have no information about them at all.

Q. Do you know whether or not they did get copper wire, cross arms, etc.?

A. They got it ultimately but I know they could not have gotten it as rapidly as——

Q. Not what you know——

Mr. Burr: Let him finish the answer.

Q. How do you know?

A. Because my general information is to that effect in studying the supply question. I know that this condition has been reproduced in storm after storm, and while I have not made the investigation of independent companies for these storms I have in other storms and I know they have trouble in getting their supplies.

[fol. 9567] Q. What do you know about how soon the in-

dependent companies were back in service in these particular storms?

A. I made no investigation.

Q. What right have you to say to this Commission that you know they could not have done it?

A. Because my general information leads me to that opinion. It is an opinion based on general information.

Q. What general information?

A. I made investigations of this kind as to the rapidity with which the independent companies got their supplies.

Q. Of the independent companies?

A. Companies that——

Q. What companies?

A. The Fire Alarm Companies in the State of Massachusetts.

Q. Are they telephone companies?

A. They are handling the same class of equipment.

Q. I did not ask you about fire alarms or sprinkler systems. I am asking you about telephone companies. What independent telephone companies have you ever investigated to find out how quickly they were rehabilitated after a storm such as you have testified to?

A. I do not think I can give you a name.

Mr. Shuler: That is all.

By Mr. Burr:

Q. Tell the Commission what the position of the State of Ohio is with reference to the sleet storm belts of the United States?

A. This is in a section where you can regularly expect having a serious sleet storm at least once in three years.

[fol. 9568] By Mr. Kinnison:

Q. Why don't you have the facts present showing the history of Ohio in this case?

A. I can do that if you wish in a general way.

Q. I object to the question awhile ago on the ground that you had no history of these casualties.

A. I understood you to refer to fire casualties.

Q. You do have records of other casualties?

A. I have a summary that will show the situation as developed by our engineering department.

By Mr. Burr:

Q. Produce it, if you please?

A. May I have the map in front of you?

Q. I hand you a map marked "Sleet Storm Map."

A. Yes.

Mr. Burr: It may be marked for identification Cox Exhibit No. 18, and it is offered in evidence.

And thereupon the Document above referred to was marked for purposes of Identification as Cox Exhibit No. 18.

Q. Explain it to the Commission, if you please?

A. This is a map prepared by the engineering department of The American Telephone & Telegraph Company showing, by the insertion of specially colored pins, the location of the serious sleet storms over a number of years.

Mr. Kennison: That does not show specific years or specific damage done in Ohio? What is that, a general chart? [fol. 9569] The Witness: It is a general chart, yes, sir. It is simply a pin map showing the recurrence of sleet storms and designating their severity.

Q. Is there a key to the map?

A. Yes, sir, there is a key to the map, and, roughly, the darker the pigmentation the more severe the storm area involved.

By Mr. Kennison:

Q. That is taken from the records of The A. T. & T.?

A. Yes, sir.

Q. Are the records of those sleet storms available?

A. I presume so.

Q. You haven't got them?

A. I haven't got them. These were not prepared by me. This was furnished by the engineering department.

By Mr. Dotson:

Q. Over what period of years does that study extend, if you know?

A. I don't know, but my understanding is it goes back 15 or 20 years. It is a long period.

Q. How recent a date is that brought to, if you know?

A. This map first came to my attention last year and while I don't know that it was prepared then I am reasonably sure that it is within a year or two.

Q. It was not prepared under your direction?

A. No, sir.

Q. You don't know under whose direction it was prepared?

A. I know it was prepared by the engineering department.

Q. Of the A. T. & T.?

A. Yes, sir.

Mr. Burr: It was prepared, Mr. Dotson, on August 1st, [fol. 9570] 1920, in its original form and has been corrected from time to time since, if you will take my statement for it.

Mr. Gentsch: We will take your testimony. You are the best witness any how.

Mr. Dotson: What change do you claim has been made in the map since August, 1920?

Mr. Burr: That is what I cannot tell you. But we will endeavor to find out for you.

Mr. Gentsch: We want to object to the introduction of this map. It is clearly apparent from this man's testimony that he had nothing to do with it. He has no personal knowledge of it. It was prepared by some one else. He has no knowledge how, when or where.

Mr. Shuler: Is Mr. Cox to be here next week?

Mr. Burr: It makes no difference to us whether the map goes in.

Commissioner Poor: The objection is well taken. I was under the impression it was produced in response to a question of Mr. Kennison.

Mr. Kennison: I was asking for facts and records, the records of the company.

Commissioner Poor: It is not responsive to your question. The objection to the introduction of the map at this time is sustained.

Mr. Shuler: Is Mr. Cox to be here next week?

By Mr. Burr:

Q. Mr. Cox, has the Ohio Bell Company all of the vouchers of the Old Ohio State Company for purchases made?

[fol. 9571] A. They are available.

Q. For a period of how many years?

A. I don't know how many years back. I have only confined my attention to the recent years.

Q. How far back?

A. 1919 and '20. I will have to refer to the study to get it exact. 1919 and 1920.

Mr. Burr: You were asking about Mr. Cox's return. As I understand it, this concludes the hearing for this week, and the first four or five days of next week are assigned for the same case. Mr. Anthony will be here for cross-examination. Mr. Schneider likewise and Mr. Kositzky and I do not know whether Mr. Cox can return or not at that time, but we will ask him.

Mr. Dotson: I doubt if we will be prepared to cross-examine him next week. We will want a transcript of his testimony first.

Mr. Burr: Is it the understanding then that the cross-examination of Mr. Anthony and Mr. Schneider and Mr. Kositzky will proceed next week?

Mr. Shuler: Yes, so far as I am concerned.

Mr. Burr: Those are the only three you want next week?

By Mr. Shuler:

Q. Can you tell us where the warehouses of the Western Electric are located in the United States?

A. Boston—I will refer to the ones that deal specifically with, whose sole function is to serve, the Associated Companies. You see they have two classes. They have warehouses that are primarily established to deal with the gen- [fol. 9572] eral trade.

Mr. McConnaughey: There is one in Columbus; is that for the general trade?

The Witness: Yes, sir.

Mr. Gentsch: You did not prepare any comparative statement——

Mr. Shuler: Wait until he answers me.

The Witness: I haven't finished yet. I wanted to read it. If I can't find it I will give it to you from my own memory. I do not seem to have it here.

Boston, New Haven, New York, Philadelphia, Pittsburgh, Washington, Savannah, Atlanta, New Orleans, Nashville, Cincinnati, Cleveland, Indianapolis, Chicago, Minneapolis, Omaha, Des Moines, St. Louis, Dallas, Oklahoma City, Denver, Los Angeles, San Francisco, Portland, Seattle, and Spokane. There ought to be 32 of them. If you

will count them I can see whether it is correct. Their main supply housing manufacturing point is at Hawthorne.

Q. Have you prepared any exhibits showing the costs to the Western Electric Company of manufacturing any articles?

A. No, sir.

Q. Can you give us that?

A. I haven't that information available.

And thereupon the further hearing of this matter was adjourned to Monday Afternoon, May 26th, 1924, at 1:30 o'clock.

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[fol. 9573] And also W. T. ANTHONY, resuming the stand for further cross-examination, having been heretofore duly sworn, continued his testimony as follows:

Cross-examined by Mr. Dotson:

Q. Mr. Anthony, you were answering the series of printed inquiries that were submitted for you to answer and you had proceeded I think down to No. 4, or possibly you had finished with No. 4, of the details and supporting dats of the single ticket toll operating method.

A. That is right, yes, sir.

Q. There are a few other questions that followed; if you will, take them up now and finish them.

A. Shall I continue as I started?

Q. Just continue in the same way as you started.

A. Question. Who, if you know, originated what is known as the fast manual, similar to your No. 1 C, that is having multiple lamp signals and feature cords?

Answer. I have never heard of any board in particular being designated as the fast manual. A switchboard is as fast as the number of operators who are placed at the switchboard makes it, so far as the speed of answer is concerned.

Q. Have you any particular name or designation for this fast manual board, or rather the lamp signal feature cords service, of your own? Is there any particular term [fol. 9574] you give that?

A. No, I don't know just what it is.

Q. Do you know anything about this service that was originated by the Kellogg people?

A. Well, I know of Kellogg boards of various types but I have never heard any of them designated as fast.

Q. Well, laying aside the word "fast", whether it is called that or not, I refer now to a fast manual board similar to your No. 1 C—if it isn't a fact that the Kellogg people were the early developers and originators of such a method or system, whatever you want to call it?

A. It is my understanding that the first board of the type known as our 1 C was developed by the A. T. & T. Company.

Q. Isn't it a fact that the Kellogg people developed the fast manual similar to your No. 1 C?

A. Well, the Kellogg Company have different types of boards. If you mean a board similar to our 1 C so far as machine ringing cord circuits are concerned, it is my understanding that the Kellogg people manufacture such a switchboard. That is, they have a type of machine ringing cord circuit.

Q. The machine ringing cord circuit, does that have a lamp signal, do you mean, or multiple lamp signal.

A. I know of Kellogg boards that have lamps associated with multiple jacks and I know of Kellogg boards that have separate answering jacks. We have both types of those boards in our territory.

Q. Do you know that it is a fact that the Kellogg people [fol. 9575] did develop a multiple lamp signal and feature cords for the telephone service?

A. I don't know anything about the Kellogg developments, Mr. Dotson.

Q. You could not say anything about that?

A. I could not.

Q. So you would not be able to say whether they did or did not develop a multiple lamp signal and feature cord?

A. No, I could not say anything as to the development of the board. I know that we have in our territory Kellogg boards but I do not know who developed them.

Q. Now, for the purpose of the record, will you tell us what a multiple lamp signal and feature cord is like; what is the character of it; what purpose does it serve?

A. You have in mind now, I presume, a switchboard where a lamp is associated with each multiple jack?

Q. Yes, in which it uses multiple signals; that would be several lamps, would it not?

A. Yes, we have what we call multiple lamp boards of various types. We have boards where part of the signals—answering jacks—are multipled. We have boards where all of the answering jacks are multipled.

Q. Well, the purpose of the multiple lamp signal is to enable several operators to answer the same call?

A. That is right.

Q. That facilitates the placing of the call, does it not? That is, the operator that is at leisure can answer it promptly; it don't depend on one operator alone?

A. I would not say that it made for a prompter answer [fol. 9576] when there is more than one appearance of the answering jack; it is a question of providing sufficient operators under either system to provide a prompt answer.

Q. Well, the multiple lamp signal is now in general use, is it not, especially in all large exchanges?

A. Oh, I would not say that, no. Answering jacks are multipled where a case can be proven for an additional investment in equipment.

Q. What are the conditions that you have in mind in the answer you have just given?

A. Oh, there are several conditions, Mr. Dotson. One factor is whether you want to sacrifice subscriber's multiple jack, I suppose. Another factor is the calling rate per line. Those are the two main factors.

Q. Well, now, what would be the conditions that would cause or prompt the company to be willing to make the sacrifice you speak of for the use of the multiple lamp signal? You say if the company felt ready and willing to make the sacrifice of certain equipment there——

A. Well, that is a matter of cost.

Q. Isn't it a matter of service too?

A. No, as I see this question it is purely a matter of cost. If the multiple requirements in an office justify the space regularly allotted to subscribers' multiple, the provision of multiple answering jacks would make it necessary to trunk calls to multiple appearing in another board.

Q. Has any variation in the calling rate in the various classes of subscribers anything to do with the use of the [fol. 9577] multiple lamp signal?

A. Yes.

Q. In what respect?

A. Well, the higher your calling rate, the less answering

jacks per panel to give an operator a load. That means that with a high calling rate primary answering jacks and multiple answering jacks can be provided in less space than where you have a low calling rate. Also, the multiple jacks provided are of more use for the reason that more calls per jack are originated.

Mr. Dotson: Will you please read that answer?

(Answer read.)

Q. You may take up the next question.

A. Question. Who developed and owns the fundamental patent on automatic coin collectors?

Answer. I presumed this question has reference to the prepay coin box service which I referred to in my direct testimony. Information on the matter of prepay coin boxes is furnished the Ohio Bell by the A. T. & T. Company. It is my understanding that the A. T. & T. Company developed equipment that is used fir prepay coin box service in connection with The Gray Telephone Pay Station Company. It is also my understanding that the A. T. & T. Company owns or is licensed under several patents relating to this matter.

Q. You do not know of your own knowledge that that is the case, do you?

A. Not directly.

Q. You do not know under what patents they have developed that service nor the date of it?

[fol. 9578] A. No, I do not. I have seen the patent numbers and the dates, but I have no record of it here.

Q. You may take the next.

A. Question. Who owns and developed the fundamental patent on the motor generator ringing equipment?

Answer. I presume this question has reference to the machine ringing B trunks referred to in my testimony. Information regarding machine ringing B trunks are furnished the Ohio Bell by the A. T. & T. Company, and it is also my understanding in this connection that the A. T. & T. Company now owns or is licensed under a number of patents relating to this development. I think Mr. Allen covered this matter in his testimony.

Q. In your testimony, Mr. Anthony, on Page 987, you stated, in response to the question, "What is traffic engineering as applied to the telephone business?", "Traffic

engineering as applied to the telephone business has to do with the providing of methods and equipment for the handling of traffic, that is, local traffic and toll traffic." I would like to have you make more specific what you meant by that answer as to providing methods and equipment for handling of traffic, if you will.

A. I had this in mind, Mr. Dotson. If a new central office is required in a certain exchange the traffic engineer is responsible for determining the amount of equipment required to serve that office for an economical period, and also for estimating the requirements for a 15 or 20 year period for the purpose of the proper design of building and the [fol. 9579] selection of the proper type of equipment. The same requirements obtain in connection with the toll equipment. The traffic engineer is also responsible for initiating recommendations for the proper amount of traffic and equipment between various offices in an exchange area. I have in mind inter-office trunking equipment. He is also responsible for determining the toll circuits required between various exchanges in the territory. All of these items are recommended by the traffic engineer for an economical period.

Q. Now, the traffic engineer—the traffic department, as I take it in connection with your former answer, if I understand your answer, relates to new developments, for instance, new exchanges or new toll service; in fact, in pioneering the plans and specifications and the character of the equipment to be installed and operated in new plant and in new toll lines. Now what, if anything, has the traffic department to do in the line of your work with established businesses, a built-up operating plant?

A. Oh, I did not mean to imply that we were concerned only with new offices. The traffic engineer is also responsible for recommending additions and changes, additions to and changes in existing equipment.

Q. I would like to have some idea, Mr. Anthony, of the traffic organization maintained in Ohio, first of all in the State headquarters, of which I understand you are the head and of which you are in charge. You are the chief traffic engineer of the Ohio Bell Company?

A. My title is general traffic engineer.

[fol. 9580] Q. What organization do you maintain in the department at Cleveland for the State-wide business of the company?

A. Now you have in mind traffic engineering only and not the operating end of the traffic department?

Q. Well, I refer primarily, first of all, to the traffic engineering of the department.

A. In answering that question I might cover in a general way the division of the duties between the general traffic engineering office and what we call the field people.

Q. Very well, you may do it in that way.

A. The general traffic engineer is responsible for recommending additional equipment and changes in existing equipment as required in our common battery offices. That includes local central office equipment, toll central office equipment, inter-office trunk equipment, toll line plant, operators' quarters equipment, estimates in connection with building requirements, in connection with cable requirements, and of course all the necessary fundamental studies that are made for plants which the company has in mind. That is, we work in connection with the chief engineer's office in connection with study work.

Q. Now, your statement then is a brief and general statement of the duties and responsibilities of the general traffic department?

A. That briefly covers the matter.

Q. Your department then does nothing in the field; it has no part in the operating end of the traffic business?

A. No, we have no direct responsibility in connection with [fol. 9581] the operating end of the business. It is necessary of course for us to keep in close touch with the operating people and have their viewpoint in mind as that controls to a large extent the engineering of equipment.

Q. You exercise then some degree of supervising direction of the operating traffic department?

A. No, I would not say that I have any direction of the operating department at all. The direction of the traffic department is under the general superintendent of traffic and the division traffic superintendents. My——

Q. Who is——

Mr. Burr: Wait a minute. Let him finish, please.

The Witness: As I said before, my main connection with the operating end of the traffic department, and I mean by that the department charged with the handling of traffic is in connection with engineering matters.

Q. Yes, I understand. Now who has charge of the operating traffic work?

A. Well, Mr. J. F. Carroll is general superintendent of traffic and is in charge of the entire traffic department, including my unit.

Q. Then do we understand that the traffic department consists of two general divisions; one is the general traffic department that you have briefly described you are in charge of——

A. General traffic engineering.

Q. General traffic engineering, and also the general operating department?

A. That is right.

Q. And is there any person in charge of the operating [fol. 9582] traffic department occupying a position in that respect similar to yours in the general traffic work?

A. Mr. Carroll has reporting to him four division traffic superintendents.

The Ohio Bell territory is divided into four divisions, the Northern Division with headquarters at Cleveland, the Western Division with headquarters at Toledo, the Southern Division with headquarters at Columbus, and the Dayton Division with headquarters at Akron.

Each of those Divisions is headed by a division traffic superintendent.

In addition, Mr. Carroll has reporting to him a general supervisor of traffic who is an adviser on operating matters, and a general supervisor of toll traffic who is an adviser on toll matters. These two men are responsible for developing methods in connection with the operating end of the game and they deal with the division traffic superintendents in connection with problems that arise from time to time, and quite frequently go into the territories of the various division superintendents and assist them in connection with specific problems.

Q. Going into the various fields, traffic subdivisions in operating work, no part of that have you to do with whatever; you do not go into the various fields where they are in operation and deal with their problems direct at all, do you?

A. Only the engineering, traffic engineering problems but not the operating problems, no.

Q. Then as we understand it, it is the work of the traffic [fol. 9583] department to plan all of the methods, all of the

equipment and requirements for each exchange and exchange area where such work is required?

A. That is right.

Q. And then you have your operating traffic division in charge of various sections of the State, that is, of certain exchanges in certain sections of the State, who carry out these instructions and these plans and instal them wherever that is required throughout their territory?

A. That is general is right, but I might say that my assignment makes it necessary for me to keep in touch with the operating people, as I said before, so that the engineering may conform to the viewpoint of the operating people.

Q. Now, the traffic department located at Cleveland of The Ohio Bell Telephone Company, in charge of—did you say Mr. Carroll or Mr. Harris?

A. Mr. Carroll.

Q. Is responsible for all of the traffic engineering work for the Ohio Bell Telephone Company throughout the State except in the Cincinnati area?

A. That is right, and of course there are connecting companies in Ohio over which we have no jurisdiction.

Q. All of the various exchanges and traffic areas of The Ohio Bell Telephone Company which you have mentioned handle their traffic business under the direction of the Ohio Bell traffic department at Cleveland? In other words they are all under the supervision and direction of the department at Cleveland?

A. You have in mind the four divisions that I mentioned?

Q. Yes, I have in mind those?

[fol. 9584] A. That is right.

Q. Yes. If any of those sections have any traffic problems that their own local engineers are unable to handle they seek the advice and assistance of the State traffic department?

A. That is right.

Q. Do any of these local areas of these four divisions have local traffic organizations of their own corresponding to the one at Cleveland for the State Company?

A. Each division traffic superintendent has reporting to him district traffic men in charge of various districts in the divisions, and then other men who are assigned to supervisory work and to field traffic engineering.

Q. How many traffic engineers have you at Toledo in the Toledo divisions?

A. We have a division traffic engineer at Toledo.

Q. Is that all you have, just a division traffic engineer?

A. The division traffic engineer has some clerks in his organization. Right now at Toledo, Mr. Dotson, is more of less of a special organization that has been built up to carry on the consolidation work.

Q. But normally speaking now, in the Toledo division, what would be the personnel of a traffic department for that division?

A. A division traffic superintendent, a district man for each district, a man assigned to supervisory work and a man assigned to traffic engineering; also a toll specialist.

Requirements vary in different divisions and vary at different times dependent on the number of problems they [fol. 9585] have. The entire traffic department of the Ohio Bell is flexible. Men are transferred from one division to the other to meet the requirements and problems as they come up.

Q. Well, Mr. Anthony, for instance in the Toledo exchange area, there is in your financial report every year, your annual financial report, an item called "traffic expense", and it usually is a considerable sum as compared with the other items of expense; can you tell us just what particular items are included, what particular items of expense are included under the traffic item, so that we will have some idea of what you are referring to?

A. I am not familiar with the statement you are referring to, Mr. Dotson.

Q. You could not give it to us in any definite detail?

A. No, not without seeing the statement and checking to see what it is made up of.

Q. Well, is the statement only carries the one item, traffic, and the sum total of that item, that would not disclose anything to you? You would have to have other means of information, would you not?

A. I do not know just what statement you refer to.

Q. I said in the annual financial statement of the company published broadcast and filed with the City Clerk of Toledo.

A. I have never seen a statement of that kind prepared for specific exchanges. I have seen the statement for the entire company.

Q. Well, your statement, for instance, divided into maintenance cost and traffic cost, and general cost, etc., com-

mercial cost, does not disclose any other subdivisions of [fol. 9586] items. Take, for example, the item of maintenance cost.

Commissioner Poor: Mr. Dotson, I do not like to interrupt, but hadn't you better put on the man who knows about that and ask him?

Mr. Dotson: I will withdraw that last question. I thought maybe this witness might know.

Q. Now, in another place you testified, speaking of The American Company furnishing you practices which you used in connection with your toll line engineering, that the practices are "We consider *of* the best available". Upon what do you base a statement of that kind?

A. I base that statement on my experience with various practices. I have seen practices that were developed by individuals and seen practices that were developed by companies, and the practices which have been developed by the A. T. & T. Company I consider from my experience the best available.

Q. How do you arrive at an opinion of that kind? Are we to understand that you make a comprehensive study of the practices and suggestions and methods published and offered by the A. T. & T. Company with the methods and practices of other companies in order to determine the superiority of the A. T. & T. methods, suggestions and practices to those of others?

A. No, I do not have that in mind. The way I feel about the A. T. & T. practices, I would not consider it necessary to go out and check other practices, because I have been using them long enough to have sufficient confidence in them to apply them and we know from the results that we get that they are very good.

[fol. 9587] Q. Then you have not made any comparative study at all of the practices of the A. T. & T. Company with those of the independent companies? You just base that, as you have said, on the long use you have made of the A. T. & T. practices which have proven satisfactory to you, and upon that you base your opinion that they are satisfactory?

A. I also stated that I have seen practices developed by individuals and developed by other companies and that is one of the reasons why I feel that the A. T. & T. practices are the best.

Q. Have you used any developments of any other agency than those of the A. T. & T. Company?

A. Yes; during the receivership of the Central Union Company quite often practices were developed by individuals.

Q. By whom?

A. By various individuals in the organization.

Q. Well, that was in the Central Union Company organization?

A. During the receivership.

Q. Well, that was an Associated Company of the Ohio Bell, was it not?

A. Yes, it was.

Mr. Burr: Just let me ask you one question. Did it have the benefits of the license contract during the receivership?

The Witness: We used them. We used a great many of them. But during the receivership the organization was run a little differently and we were not in as close touch with the A. T. & T. Company as we are now.

Mr. Burr: That was because one of the receivers was from [fol. 9588] the independent field?

The Witness: That is one reason.

Mr. Laylin: I move that that be stricken out.

Q. Were you with the Central Union at the time it was under the receivership?

A. Yes, sir.

Q. Where were you?

A. Chicago.

Q. Of course you know that the Central Union was operated by receivers under the Court's orders?

A. I think so.

Q. And that those receivers just simply conducted the business with the equipment that they had on hand and only utilized additional equipment where it was absolutely necessary and directed by the Court?

Mr. Burr: Just a moment. Are you making that as a statement of fact?

Mr. Dotson: No, I am just asking the question. I am just doing what you have done in the past.

Mr. Burr: Let us see if you are.

(Question read.)

Mr. Burr: That certainly goes far enough and the question has four or five different barrels and it seems to me that it ought to be at least separated.

Mr. Dotson: I am not through yet.

Q. Now in view of that fact——

Mr. Burr: I object to the question.

Mr. Dotson: I made that statement to base a question on.

Mr. Burr: The point is that you are stating something [fol. 9589] as a matter of fact. For example, you have just said "in view of that fact", and it is not a fact anywhere in this case and I am objecting to it because you are assuming something which is not shown by the testimony.

Mr. Dotson: Well, there are a lot of things testified to that are not in the record in this case, but they get in there because they are testified to.

Mr. Burr: I am objecting to the question.

Commissioner Poor: I have not heard the question yet.

Mr. Dotson: Now the question is, in view of that fact——

Mr. Burr: I object to that. You are stating a fact and then saying " in view of that fact"; you are testifying when you do that.

Mr. Dotson: I think, Your Honors, when a receivership is testified to—the witness called attention to the fact—that Your Honors will realize that the statement is a true and correct statement of a fact that would exist and prevail under certain circumstances. It is not outside of the fact. I wanted to propound a question "In view of that fact". Now if Mr. Burr can show wherein the statement that is the basis of the question is contrary to the fact, alright.

Mr. Burr: I say this, Mr. Dotson, that you are too good a lawyer not to know that you are not entitled to state anything in this record as a matter of fact. You can not testify except under oath. You cannot testify except through [fol. 9590] the medium of a question. If you consider that what you said in your question represents the fact, then suppose you state your question hypothetically, assuming those to be the facts, but not stating them as a fact, as you have no right to do. I am going to object here just as long as you continue to frame your question or statement, whichever it may be called, in the way that you have.

In the first place, I think you have stated some things as a matter of fact which, apart from the fact that they are not anywhere in this record, are not true in point of fact.

Mr. Dotson: You get too many facts in here and we will be all muddled up yet.

Commissioner Poor: Now we have got down to the place where we haven't any question yet.

Mr. Dotson: Just strike out what I have said.

Q. Assuming what I have stated to be a fact——

Mr. Burr: Now assume what you want to assume.

Q. Assuming what I have stated to be a fact, do you consider that the criticism that you have made upon the results of operating the Central Union Company by the receivers is a fair means by which you are justified in arriving at the conclusion that the A. T. & T. methods are better than any other known methods and practices?

Mr. Burr: I object.

(Question read.)

Commissioner Poor: I think that is proper cross-examination. He has made the statement that he considered the [fol. 9591] A. T. & T. methods the best, and this calls for the basis of his opinion.

The Witness: In the first place, I did not mean to criticize the operation under the receivership. I simply stated that during my service with the Central Union Company while that company was operating under the receivership I knew of the cases referred to, but that is not my only reason for considering the A. T. & T. practices to be the best. I have also had some experience with methods in use by an independent company, and based upon that experience I think the A. T. & T. practices are the best.

Q. What company was this now that you refer to?

A. The Ohio State Telephone Company, which was an independent company.

Q. What means of knowledge have you of their methods and practices that you referred to?

A. Well, I knew the methods that were in effect when that company was merged with the Ohio Bell.

Q. Well, let us get a little more definite. What methods were there that you refer to now?

A. Well, in my direct testimony I think I cited a case where there was considerable waste of operators for the reason that the force was not adjusted to the fluctuation in traffic, and that the Ohio Bell Company takes care of that

by means of Traffic Circular No. 117, which is an A. T. & T. method.

Q. Now that case you refer to was in Cleveland?

A. That is right.

Q. That is the only case you know of that you recall [fol. 9592] now and by which you seek now to justify the opinion that you have expressed on this superior method of the A. T. & T. Company as compared with the independent company?

A. No, no, I cited that case because I happened to be located in Cleveland and was closer in touch with that situation than the others, but a similar condition obtained in the other exchanges in the State. They had no definite method of adjusting the operating force to the fluctuation in traffic. There was no method in use except the judgment of the chief operator.

Q. Do you know whether or not The Cuyahoga County Telephone Company had an observation board in operation, a service observing board, I should say?

A. They had an equipment in the downtown office from which they could dial various positions in the city but they had no service observing board similar to the service equipment used by the Ohio Bell Company.

Q. What they did use was for the same purpose, was it not; just a different method from the one you described; isn't that true?

A. They did not get the complete story on the call for the reason that they were not connected to a subscriber's line. They were connected to an operator's position and they could not follow the progress of a call from the time it was originated until it was completed because they were not on a specific line. They were simply on the head set of the operator.

Q. But that was the purpose of the board which they had in use, a service observation work that they were carry- [fol. 9593] ing on?

A. It was for that purpose, yes.

Q. Now the study you made at the time you mentioned in Cleveland in this respect was made at the time that you were reorganizing and taking over the Home Service of that city; that is, the Bell Company; you were making that investigation in order to determine the number of op-

erators that they should have and the distribution of the work?

A. As I recall it, it was shortly after they took over the operation, shortly after the two companies were merged.

Q. And that was a necessary study at that time in order to work out the plans that you had in view with reference to the operation of the new service?

A. Oh, no, that study was not made in connection with any plans for consolidation. That study was made by our operating people to determine whether or not the office was being operated as economically as it should be and whether or not the proper number of employes were provided each half hour period of the day in accordance with the fluctuation in traffic.

Q. Isn't it true that that was simply carried on as part of the general work which was being done in that respect by The Ohio Bell Telephone Company all over the state?

A. It was extending into the Ohio State offices methods which had been developed by the A. T. & T. Company and were in use in the Ohio Bell offices.

Q. And you were making a study of the independent phone service there for the purpose of installing these same methods that the Bell Company had adopted from the A. T. & T. Company?

A. In that particular case.

[fol. 9594] Q. Mr. Anthony, this study that you describe of the operating service is being carried on continually, is it not, on the part of the Ohio Bell Company?

A. You have in mind the adjustment of operating forces?

Q. Yes, the adjustment of the operating forces?

A. Yes, that is a regular operating routine now, to keep the operating forces adjusted to the traffic.

Q. Isn't it possible that between the time that The Cuyahoga County Telephone Company ceased operation and the Ohio Bell took it over and got it under control and got it reorganized in accordance with its general plans the proper adjustment of operating forces would get improperly proportioned and out of adjustment during that period?

A. If they had had a method for adjusting the force, the force might have gotten out of alignment during that period. However, they did not have a definite method in effect; the operating people of the Ohio State were not familiar with the methods used by the Ohio Bell Company

and there was no change made in the organization of this office I have in mind between the time that we took over the operation of the Ohio State and the time this study took place.

Q. Your first knowledge of the condition of the operating forces in the old Cuyahoga County Telephone Company was after the Bell Company took it over; isn't that true?

A. No, we were familiar with the situation before we took over the operation for the reason that we dealt with the Ohio State people some time prior to the consolidation.

[fol. 9595] Q. You say you had some dealings with them prior to the consolidation. What were the dealings you refer to? What was the character and nature of them?

A. We dealt with them to find out what records they were keeping, what the methods were; we were interested in those things from two angles, one the amount of data that would be available for general operating purposes and the data that would be available for consolidation plans.

Q. Does The Ohio Bell Telephone Company use any traffic methods and practices, any equipment originated and furnished by independent companies, or did the Ohio Bell Company use any such methods and practices prior to unification?

(Question read.)

Mr. Burr: Now do you include equipment in both barre-s of that question?

Mr. Dotson: I think it is clear. If it is not clear to the witness I will try and clear it up for him.

The Witness: Read it again.

(Question read.)

A. We have a board that was built by the Kellogg Company——

Q. What company?

A. The Kellogg Company; in service in the territory of the Ohio Bell Company prior to the consolidation.

Q. Where was that board located?

A. What I had in mind was Painesville.

Q. At Painesville?

A. Yes, sir.

Q. Is that the only independent telephone equipment [fol. 9596] which it used prior to the consolidation?

A. That is the only one I recall offhand. There may have

been others that were obtained through previous consolidations. I presume you have in mind by consolidation, the consolidation of the Ohio State and Ohio Bell?

Q. Yes, that is what I mean.

A. There may have been some others in smaller exchanges; I would not recall.

Q. What was the type of the board in Painesville?

A. That was a Kellogg board with machine ringing; it is a small exchange, few positions.

Q. How did the Ohio Bell acquire that board that you have just mentioned in Painesville? Was it one installed by them originally or acquired by them as a going concern?

A. That board was in service when I came to Cleveland and I cannot say definitely although I imagine it was acquired through a consolidation.

Q. Was that a multiple lamp board, do you know?

A. That board has the lamp signals associated with the——

Q. Was it multiple, that is multiple lamp?

A. It is a form of multiple lamp board, that is right.

Q. Are you still using it there?

A. Yes.

Q. Do you know how long it has been in use in Painesville?

A. No, I do not, Mr. Dotson.

Q. Did I understand you to testify awhile ago that the multiple lamp signal is generally in use over the state?

A. No.

Q. What did you say?

A. I said that we provided multiple lamp signals where [fol. 9597] we could prove them in from a cost standpoint, where they were economical.

Q. To what extent, if you know, is the multiple lamp signal used?

A. We have multiple answering jacks in some Cleveland offices, in some Columbus offices, and I rather think in some Toledo offices; I think one or two Toledo offices; also in Painesville.

Now when I refer to multiple answering jacks in Cleveland, Columbus and Toledo, I do not have in mind a lamp associated with each multiple jack, because an arrangement of that kind would not be at all practicable in the cities referred to at least. I have in mind where some or

all of the primary answering jacks, or what we call the first appearance, are multipled ones. Through the entire board there are two appearances. That is somewhat different from the Painesville arrangement.

Q. In what respect are those different from the Painesville board? What is the difference?

A. The difference, Mr. Dotson, is that in Painesville there is a lamp associated with every appearance of the subscriber's multiple. In the other cases referred to the answering jacks and subscriber's multiple jacks are separate. But we provide an additional appearance of the primary answering jacks. It would be impracticable to use what you call full multiple lamps in Cleveland, Toledo, Columbus and other cities for the reason that those boards are designed for small cities having not over 3000 lines.

Q. Why do you say the multiple lamp signal used in [fol. 9598] Painesville is not suitable for use in a large city like Toledo, Columbus, Cleveland and others?

A. For the reason, Mr. Dotson, where you provide a lamp with every multiple jack you double your subscribers' multiple and space requirements, and the boards that I am familiar with are limited to around 3000 lines. I think Mr. Brooks testified to the same thing in this case or in the Dayton case.

Q. Why does it prove in successfully in a 2, 3 or 4000 subscriber board and not in the other or larger board?

A. I do not think that multiple line lamps always prove in on the small boards. You may be able to make a case for them in the smaller boards where you have not more lines than can be terminated within reach of the operators, but when you get into a large office where you may want to terminate 8000 lines in front of your A operators, if multiple lamps were provided with each one of them you would have to provide a ladder for the operators to get up and make a connection.

Q. Your reason then is that the equipment would be too elaborate to be practical?

A. And costly. It would be impracticable.

Q. In your testimony in chief you referred to a general engineering circular No. 1200 and stated it was very valuable to the traffic engineers of the Ohio Bell Company, and further stated your reasons. Among them, to refresh your memory, was the reason that it covers in detail practically all of the practices necessary in connection with

[fol. 9599] the engineering of local and toll switchboard equipment, including the proper type of equipment to provide and the method of estimating future requirements.

Mr. Burr: From what page of the record are you reading?

Mr. Dotson: That is on page 1000.

Q. What knowledge had you of the information contained in this Circular 1200 before it was received by you from the A. T. & T.?

A. G. E. C. No. 1200 is a revision of General Engineering Circular No. 644. Now 644 was a revision of a circular which I think was No. 294, and it was in use in the Bell System when I entered the telephone business. 644 and 1200 are, as I say, revised, and replaced 294. They brought the information up to date and were made more elaborate; that is, covered more detail, etc.

Q. What new information matter did it furnish which was unknown to you prior to your receipt of it, anything?

Mr. Burr: To which number are you referring?

Mr. Dotson: No. 1200, General Engineering Circular.

A. Why, one matter is that 1200 elaborated very much on the methods of determining toll switchboard requirements and the design and layout of toll switchboard equipment. 644 and 294 referred to this matter but did not cover it in the detail that 1200 does. 1200 provides a section which is very much in detail—gives the typical ex- [fol. 9600] amples and is of great assistance to a toll switchboard engineer in engineering new switchboards or making changes in or additions to boards already existing.

Q. Your work as a traffic engineer had covered the entire field that was covered by this Circular 1200, had it not, so that you were somewhat familiar with everything that was set forth in that Circular? That is true, isn't it, Mr. Anthony?

A. That is true in a general way, that the A. T. & T. Company had furnished in previous circulars information which made me familiar with much of the information in 1200, and also during the period that No. 644 was in effect we received informally and in correspondence many of the items that were covered in 1200 when it was issued. That is, we keep closely enough in touch with the A. T. & T. and they keep closely enough in touch with us so that we have

a great deal of this information in advance of their issuing it in a circular of this kind.

Q. Well, now, the fact of the matter is, as you stated awhile ago, that Circular 1200 was just a compact statement up to date of all the data which you had availed yourselves of previously, so that it did not give you anything new, as a matter of fact?

A. Yes; for one thing, this toll set up gave us a great deal that was new. We did not have in detail—had never received in detail a toll section. If you will refer to 1200 you will find it covers a great deal of that.

Q. However, the detail that you speak of on the toll construction was nothing absolutely new. You simply had a [fol. 9601] little more in detail the manner of handling that subject than you probably had previous to that time, but there wasn't anything new about it, was there?

A. What do you mean by new, Mr. Dotson?

Q. Well, I mean that there was nothing in the circular that gave you any new ideas of engineering problems, no new solutions?

A. Yes, there are covered in that section new forms——

Mr. Burr: What section?

The Witness: In the toll section of 1200. New forms to be used in connection with estimating toll switchboard requirements, which gave us some new ideas, and since using them we have found that in addition to being more convenient than the methods we used before they make for more accurate engineering for the reason that they go into more detail.

Q. Well, now, the feature that you speak of only detailed in some respects the method of estimating cost which you had been accustomed to making all along? You had always been accustomed to making estimates of cost, had you not?

A. I did not have in mind so much the cost as determining the amount of equipment to be provided based upon past experience. It treats of the use of data collected in the past and with the prediction of that data also as to the lay-out of the equipment, that is the economical location of the equipment to handle various kinds of toll traffic.

Q. What I am getting at, and I think we can understand one another pretty quickly, the very thing you are referring [fol. 9602] to was nothing new to you? You had been ac-

customed to doing this work in a certain way. Now circular No. 1200 just gave you some suggestions, if I understand you correctly, of doing the same kind of work only in a little different form, but the same work had to be done?

A. It depends upon what you mean by "in a little different form". It is true that we did similar work before getting 1200, which was based upon an A. T. & T. Circular numbered 644 and information which we received informally or in correspondence. But 1200 gave us some new ideas and gave us some ideas that work out to our advantage in engineering this equipment.

Q. To your advantage; what do you mean by "to your advantage"?

A. To our advantage in that we provide a more economical layout of our equipment based upon——

Q. You mean economical to the company?

A. To the Ohio Bell Company, yes, sir.

Q. But there was nothing in the Circular that solved any problems for you other than you had had to deal with and had solved before?

A. That is quite a big problem, to engineer toll equipment for territory the size of the Ohio Bell Company, and if we can find any method that will make that engineering more economical it certainly solves quite a problem, Mr. Dotson.

There are other new sections in 1200 in addition to the toll section. We have a section on desk equipment, central office desk equipment, such as chief operators' desks, etc., that was not covered prior to that time. The local section [fol. 9603] is more comprehensive than in the circular previously furnished.

Q. Well, now, what you speak of at the present time refers only to certain office equipment, that there was simply a change that came along at that time that has and will continue to come along from time to time as office equipment requirements are improved upon and brought forth?

A. That, for one thing, and 1200 was also based upon studies that had been made by the A. T. & T. Company between the time 644 was issued and 1200 was issued, and I presume they will continue to make studies and eventually 1200 will be improved upon.

Mr. Dotson: I expect to have further inquiry to make of Mr. Anthony before he leaves the witness-stand, but I am not

prepared to continue with that now and I will step aside for Mr. McConnaughey to conduct whatever cross-examination he has.

Cross-examination.

By Mr. McConnaughey:

Q. Mr. Anthony, at page 986 of the record you were detailing your experience in the telephone business, and you stated that in 1913 you entered the telephone business as student engineer with the Central Group of Bell Companies, consisting of The Chicago Telephone Company, The Michigan Telephone Company and The Cleveland Telephone Company and the three divisions of the former Central [fol. 9604] Union Telephone Company. Now what was your employment for those companies? What did you do for them?

A. I reported to the assistant to the traffic engineer of the Central Group of Bell Telephone Companies and was engaged in various kinds of traffic engineering as an assistant. Do you want me to outline my duties in detail?

Q. Yes, what you did, particularly how you worked for these different companies?

A. Well, when I first started with the Central Group, as I said, I was a student engineer and was in training for considerable time, visited various central offices in Chicago—local offices—and assisted the engineers in that work, and in connection with the preparation of building studies and in connection with exchange fundamental plans. Later on I worked on traffic orders for local equipment.

Q. Now what was the form of organization? How was the department in which you worked related to these different companies?

A. The Central Group, the department I was in in the Central Group was headed by a chief engineer; he was chief engineer for the five companies comprising the Central Group. He had in his organization the traffic engineer, plant engineer and various other engineers.

Q. Were they developing uniform practices for all of these different companies?

A. No, I do not recall that they were developing practices. They may have at times—most every company I expect does at times—developed some sort of a practice but they were engaged in engineering work.

[fol. 9605] Q. Now the organization was such that the one department was doing this engineering work for all of these different companies under one organization; is that correct?

A. Yes, the work that they did was for the various companies in the Group.

Q. How were you paid? By whom? Where did your pay come from?

A. I have forgotten now; I don't know that. The chief clerk to the chief engineer handed me my check; I don't know where she got it.

Q. Whose check was it? What company paid you?

A. I do not recall. I do not recall that.

Q. What were the three divisions of the Central Union Telephone Company that were in that Central Group?

A. The Illinois Division, the Ohio Division and the Indiana Division.

Q. In 1917 you went back to Chicago after having seen service at Indianapolis as the traffic engineer of the Indianapolis Division, and you stated that at that time you went to work for the Central Union, which included, in addition to the Indianapolis Division, the Ohio Division and Illinois Division and the down state Indiana Division; this makes four divisions of the Central Union?

A. Yes; when I mentioned Central Group there were three divisions, Ohio, Illinois and one in Indiana. However, shortly after the point when the receivers of the Central Union Company were appointed, the Indiana territory was divided into two divisions—Indianapolis as one division and the balance of the State of Indiana, which was operated [fol. 9606] by the Central Union Company, as the other division.

Q. Was there a separate traffic organization in each one of those divisions?

A. Well, each division had a traffic superintendent. As I recall it, the organization that was in effect when there was one division in the State was divided between the two; there may have been some changes in title; I do not recall.

Q. Then in 1920 you were appointed traffic engineer of the companies that had composed the Central Union, that is, the Indiana Bell, the Ohio Bell and the Illinois Bell; they had become separate companies, had they not?

A. The Indiana Company I think had just been organized and was known as the Indiana Bell Telephone Company.

The Iillinois territory I think was still known as the Central Union. I do not recall all of the dates but my recollection is that the Indiana Company was organized first and the Illinois and Ohio Companies were later organized.

Q. You continued in that employment until you became the general traffic engineer of the Ohio Bell?

A. That is right.

Q. When you were the general traffic engineer of these three companies you were occupying the same position with reference to those three companies that you now occupy in the organization of the Ohio Bell? You at least had the same title?

A. Same title. Practically the only difference, the main difference, was that some of the engineering was then done in the field. Put it this way, more often the engineering was then done in the field offices than is now.

[fol. 9607] Q. Well, now, who appointed you to this position?

A. The position I now hold?

Q. No, the position of general traffic engineer for these three companies?

A. Mr. Kositzky.

Q. And he was the chief engineer of the three companies?

A. That is right.

Q. You worked for each of these three companies simultaneously, is that correct? That is, there was one engineering organization that covered the work of these three companies?

A. I worked of course for the chief engineer and we did work for the three companies.

Q. Did each of the three companies have its own engineering force under Mr. Kositzky?

A. Well, each company had some engineers located in the division office.

Q. And then they reported to this general engineering organization at Chicago of which Mr. Kositzky was the head?

A. No, I don't think so. I think they reported to the general manager of the company.

Q. Then what was the function of this engineering organization of which you were a part that covered the three companies; to whom did it report?

A. To whom did Mr. Kositzky report?

Q. Let us put it that way?

A. Why, I presume he reported to the president of the company; I don't know about that.

Q. Which company; there were three companies that he was working for?

A. I think Mr. Bloom was president of the companies at [fol. 9608] that time.

Q. Of all three companies?

A. Yes, sir.

Q. Then did he conduct three separate organizations for these three companies?

A. Why, there was an organization in each company. I don't know what you mean by separate. It is very much like our own case today; we have an organization at each division point necessarily.

Q. What I am getting at is this, there were three separate companies. Now you were the general traffic engineer of all of them; is that correct?

A. That is right.

Q. Now was there a traffic engineering department in each company?

A. Each company had one or more traffic engineers, that is right.

Q. Who reported to the president of each separate company?

A. Well, I think they reported—the traffic engineers reported to the traffic superintendent of each company.

Q. Just what was your personal relation to the Ohio Bell Company during this period?

A. We did much of the fundamental engineering for the three companies, and at that time we had considerable work under way and we did the engineering for most of the new projects. Also Mr. Kositzky reviewed the work done by the various engineering organizations in the field.

Q. Now from whom did you receive your pay in that position?

A. I received my pay from the chief clerk to the chief engineer.

[fol. 9609] Q. Which company paid you?

A. I do not recall how the pay check was marked. I don't know that I ever noticed.

Q. You don't know which account, which bank account, paid you?

A. No, I do not. It was paid by the treasurer.

Q. The treasurer of what company?

A. The treasurer reporting to the president of the company, who, I think, was Mr. McNaughton. I understand the checks came from his department.

Q. Was that the treasurer of the Ohio Bell Company?

A. I think he was the treasurer of all the companies.

Q. There was one treasurer of all three companies?

A. That were under Mr. Bloom at that time.

Q. While you were working for three companies you received only one check for your pay?

A. Yes, sir.

Q. There was some sort of a common fund out of which those expenses were paid?

A. I don't know how the checks were drawn; I don't know where they got the money.

Q. So far as you were concerned, you only got one check for each month's pay, or whenever your pay came?

A. Yes, that is right.

Mr. Burr: I don't know whether it will assist counsel any, and I won't make the statement if they object. It may go out of the record if counsel does not want it to stay there. But what happened at about the time that Mr. Mc- [fol. 9610] Connaughey is interrogating the witness is this:

The Central Union receivership, which was the receivership affecting the property of the Central Union Company in Ohio, Indiana and Illinois, terminated in June, 1919, and it was then determined to divide up the Central Union property according to the three states, and the work of dividing it up was commenced, and during that time the Central Union organization was maintained by States until the three separate organizations were formed. Then for a short time Mr. Bloom, who has been mentioned here, acted as president of all three companies, but it is my recollection that his presidency of all three companies did not last a year. That is my recollection of it. I do not think it could have, because the receivership ended in 1919, and in December, 1920, the Central Union property in Ohio was sold.

That is a matter of record here before the Commission. And then it was that Mr. Bloom became president of the Central Union in Ohio. In Indiana about that same time the same thing was done and Mr. Bloom became president of the company. And in Illinois the same thing. Then the consolidation between the Ohio Bell and the Ohio State

Companies came September 17th, 1921, and my recollection is that within two or three months after that Mr. Reed became president of the Ohio Bell Company, so that Mr. Bloom's presidency of the Ohio Bell Company only lasted about a year, if it lasted that long.

Mr. McConnaughey: Aren't you wrong about that date of the organization of the Ohio Company when you say [fol. 9611] it was September of '21? That was the date of the consolidation with the Ohio State?

Mr. Burr: I said the Central Union sold its property in December of 1920.

Mr. McConnaughey: What was it that happened in September?

Mr. Burr: The consolidation between the Ohio Bell and the Ohio State Companies.

Q. Now, in the interval between the organization of the Ohio Bell Company, that is, the old Ohio Bell Company, and the organization of the consolidated Ohio Bell Company, which was in September, I understand that you were still under those three state organizations; is that correct?

A. My recollection is during that entire period. As I recall it the Indiana Company built up its organization first; that is, as Mr. Burr said, there was a transition period during which the new companies were being organized and during that time men were transferred from the Chicago office to the various divisions. Some of the men were transferred to Indiana, some to Ohio and some to Illinois.

Q. Then during this period which you call the transition period, as Mr. Burr has suggested, you were doing traffic work in the traffic department in any one of these three states, wherever it needed to be done?

A. That is certain work, yes.

Q. Now a little further as to the present organization in which you are employed. Mr. Carroll is your immediate superior?

A. That is correct.

[fol. 9612] Q. To whom does he report?

A. He reports to Mr. Ide. He is general manager of the company.

Q. What relation does Mr. Kositzky have to your organization?

A. Mr. Kositzky is chief engineer of the company and reports also to Mr. Ide, general manager.

Q. You are not in any sense of the word a subordinate of Mr. Kositzky?

A. No, I am in a separate department.

Q. You are in a separate department altogether?

A. Yes, sir.

Q. Mr. Kositzky's engineering function applies to plant and physical properties more particularly, does it?

A. Yes.

Q. Not including traffic or commercial?

A. No, traffic and commercial engineering are separate from the engineering done in Mr. Kositzky's department.

Q. Mr. Ide, who is the general manager, reports to the president, I presume?

A. Yes, sir.

Q. You said on page 988 of the record that of the engineering practices and traffic operating methods in use in the territory of The Ohio Bell Telephone Company over 90 per cent have been developed by the General Staff of The American Telegraph & Telephone Company. Who developed the remaining less than 10 per cent?

A. I think in that statement I limited myself to the methods in use in my unit, although I presume the same thing is true in the other units. The A. T. & T. Company developed practically all the practices we are using except that they have not covered in any great detail practices [fol. 9613] regarding the equipping of operators' quarters, such as cafeterias and rest rooms. Outside of those two items practically every practice we are using in our engineering was furnished by the A. T. & T. Company.

Q. Those are the only exceptions you would care to make in that department?

A. Yes. There may be some detail practices—probably are—minor practices, that we have developed ourselves, but broadly speaking the practices we are using were developed by the A. T. & T. Company.

Q. You say there probably are some that you developed yourselves; what do you have in mind when you say that?

A. Oh, I have in mind forms. We may develop a form to take care of some special routine we have in connection with the collection of data, and during the consolidation we had occasion to develop forms for special data required for consolidation purposes.

Q. Well, for instance, give us some specific detail of that kind?

A. Well, I have in mind a form we prepared in connection with a trunking study on a merged basis. We afterwards called the A. T. & T. in to help us on that particular problem because they had had experience at other points that had been consolidated, such as Indianapolis and Minneapolis and some Texas points, as I recall it.

Q. So that you did not actually develop that yourselves then? You went to the A. T. & T. officers in that instance?

A. We developed the form; we called them in and con- [fol. 9614] sulted with them in order to have the benefit of their experience or studies that had been made.

Q. After you had consulted with them did you change the form you had developed or did you use the one you had developed?

A. We did not call on them in connection with the design of the form. We called on them in connection with the data to be used. That is, we consulted with them in regard to calling rates that might be expected on a merged basis, in connection with trunking factors that might be expected on a merged basis.

Q. As I understand it then, it was a situation in which you found same data that you thought would be necessary to consider which you gathered and took it to them to tell you what to do with it; is that correct?

A. No. We did not take it to them. In this case I called Mr. F. S. James and asked him if he could run out to Cleveland and review the problem with us and asked him if he would bring along any data which he had in connection with other mergers which he thought might be of assistance to us.

Q. Tell us what that particular problem was.

A. I just told you, Mr. McConnaughey, it was in connection with the selection of calling rates on a merged basis. For instance——

Q. Give us a particular instance and the facts with reference to it. That will be easier, won't it?

A. You mean an exchange?

Q. Yes.

A. Yes. One exchange was Toledo, where the Ohio Bell had a certain number of offices, a certain number of sub- [fol. 9615] scribers, and the Ohio State had certain offices

and subscribers. It was our thought that when the Ohio Bell subscribers gained access to the Ohio State subscribers and vice versa there would be an increased calling rate per station; that is, the amount of traffic originated would increase due to a larger calling list.

Q. Because there were more subscribers connected?

A. More subscribers connected, greater calling possibilities. We knew that that had been the experience where exchanges were merged although we did not have any detailed data in the matter. There was also the item of the distribution of traffic. On a non-merged basis all of the traffic originated in the Ohio Bell System was completed in that system. However, on a merged basis the Ohio Bell subscribers would be given access to several Ohio State offices. Naturally part of the traffic originated by Ohio Bell subscribers would be trunked to and completed in Ohio State offices. That meant an altogether different distribution of the traffic between offices, which would effect the amount of inter-office trunks provided, would affect the trunking from the A board and would affect the size of the B board. We called on the A. T. & T. Company——

Q. Now wait a minute. As you said a moment ago, you first gathered some data on forms which you devised yourself?

A. That is right.

Q. What data did you collect before you consulted the A. T. & T.?

A. We collected data on past experience in the Ohio Bell System several years back. I think we went back five years. [fol. 9616] Q. That is data as to the calling rate in those different exchanges?

A. As to the calling rate and as to the distribution of the traffic.

Q. To different exchanges?

A. To different exchanges, and as records were not available for the Ohio State System for the past we had special counts made so as to have as much data as possible available.

Q. Were those counts ordinary peg counts?

A. Yes.

Q. They did not differ from the ordinary peg count that you take from time to time?

A. You mean the basic data?

Q. Yes.

A. Yes, it was normal peg count information.

Q. What was the form that you devised to get that information?

A. Why, the form we designed to collect that information was one which showed the calls originating in each office; it showed the trunking factor; and frequently we had this problem to take care of and this was included in the form; the traffic that we might expect to be trunked from Bell offices to State offices would be less the first day of the consolidation than it would, say, two years after consolidation. We were concerned with those different periods.

Q. Why would that be?

A. For this reason; we will say that at twelve o'clock Saturday night we consolidated the two exchanges. Up to that time the Bell subscriber had never been able to call [fol. 9617] State subscribers. It would not be fair to assume that on Monday morning the Bell subscribers would start a wholesale calling of State subscribers except as a matter of curiosity. It takes up time to build up what might be called a community of interest factor between two different sets of subscribers. We had to make provision for taking care of practically all the pre-merger trunking, yet had to make provision to take care of the distribution of calls on the new basis. As a matter of information what we finally did on that, after getting all this information on forms, and reviewing it with the A. T. & T. Company, was to provide Bell to Bell trunks, the same number that were in service, that we estimated would be in service, the night before the cut, and then provided 60 per cent of the trunks that theoretically were required between the Bell and State offices. Now as our State traffic, trunking between Bell and State offices, trunking between Bell offices, would decrease, we would just juggle our circuits so as not to have any waste equipment at the end of the period.

Q. You estimated 60 per cent and then adjusted it according to the experience as it developed afterwards?

A. That is correct.

Q. You have not yet made clear to me just exactly what the new thing was you developed in that study?

A. The new thing was to provide a form for showing all of this information; showing, for instance, what our maximum Bell to Bell traffic would be and then showing the

[fol. 9618] theoretical traffic between Bell and State offices. Now it might happen that the traffic between two Bell offices as of the day before the merger would be greater than the traffic three years after the merger, or vice versa, depending upon the way in which the stations were to be distributed between Bell and State offices.

Now we had to get all of that information on a form so that we could find out first what our maximum condition was and then what flow of traffic we could expect in order that we could take care of the conditions as they developed after the merger. I will be glad to give you a copy of this form if you would like it. It is a pretty detailed thing and I do not know that I have made it clear to you, but we have copies of the form in my office.

Q. I think that would be interesting, but let me ask you if this is what it was; an estimate based upon the data that you could gather as to what the experience was going to be, a detailed estimate; is that correct?

A. Well, we used our own experience, that is our own past experience, and the experiences that other companies had had for similar situations as furnished us by Mr. James of the A. T. & T., who came out to Cleveland to assist us in the matter.

Q. Then as a matter of fact you did not develop your form until after you had consulted with Mr. James?

A. Yes, we developed the form and had the data on it and then called him up and asked him if he would come out and give us the benefit of his experience at these other points [fol. 9619] in deciding what estimates he would make. We already had the basic data on our form and had blank columns for the future estimates.

Q. But you did not make the estimates until you consulted him?

A. We made the estimates in consultation with him, using information we had. The point there is we would be very foolish to go ahead and make estimates without taking advantage of the experience other companies have had in similar situations.

Q. Yes. You will give us that form later?

A. Yes, sir, I will be glad to.

Q. Do you recall anything else that you developed yourself in your own department?

A. Do you mean in the traffic engineering department?

Q. Yes; you have confined your statement now to that department, as I understand it?

A. Why, another matter I have in mind that we developed, I don't know that it is original particularly, but we developed a curve that would show the relation of the trend of business conditions to the trend of toll traffic that we thought would be of assistance to us in connection with projecting our toll traffic for engineering purposes; and we plot on this form the monthly toll messages and then plot on the same form the general business trend as furnished by the A. T. & T. Company. I think it is the accounting department. That is something which we developed and have been using for two or three years.

Q. And that is something that was not covered in any [fol. 9620] of the circulars that were sent to you?

A. The particular way in which we did it was not, although the A. T. & T. sent out a circular showing the trend of business conditions and a projection into the future——

Q. Of business conditions you mean?

A. Of business conditions, and this pamphlet also showed on a separate sheet the trend of toll traffic for the entire system. But we set the thing up a little differently.

Q. You applied that to the Ohio situation, did you?

A. That is right.

Q. What was necessary?

A. Yes, that is right.

Q. Is there anything else that you can recall?

A. Oh, I don't recall offhand right now of anything else.

Q. Now you refer on page 999 to classes for the training of Associated Company men in toll operating, which, as you stated, made those who took the course toll specialists. Give us the nature of that training?

A. These classes were organized by the General Staff of the A. T. & T. Company and I think the course lasted six weeks. Each day, or almost each day, a different toll expert would visit the class and lecture on the particular subject that he had specialized in. I do not mean to say that six times six, or 36 different men came out. Some of them came out on more than one occasion and others would come out and stay three or four days and lecture on the different subjects that they had specialized in.

That course covered toll operating from the standpoint of the operator; that is, they were given a certain number [fol. 9621] of hours practice at the toll switchboards actually

handling commercial calls under the supervision of an instructor and the man heading the class; they were trained in connection with the adjustment of toll operating forces, in connection with the relation of operating to engineering; that is, they were told first what the investment in toll plant meant and how important it was that the plant provided be used to its maximum efficiency. They were told under what conditions they could expect to get the most out of the toll plant and under what conditions they would waste the plant that had been provided.

They were trained as to the proper manner in dealing with the public in connection with the handling of toll traffic. They were trained as to the different methods by which the management of toll offices could be made most efficient and economical. In fact, it covered toll from the bottom right up to the top and when these men finished they were in a position to go back to the job and do much better work.

I might say that most of the men who were assigned to these classes were experienced men. They were not greenhorns in the telephone business. They were in the telephone business, say, for two years up.

Q. Well, now, you testified on page 991 of the record as to the adjustment that you made of the operating force of the Ohio State at Cleveland whereby, as I understood it, you applied the principles of the A. T. & T. circular to the adjustment of operating forces in such a way as to effect [fol. 9622] a 25 per cent saving in that cost. Was it one particular exchange that you had in mind there?

A. Yes, I had in mind there a particular office in Cleveland, although we readjusted the forces in all of the offices. I had in mind specifically the central office and my recollection is that I said something over 25 per cent.

Q. Now tell us in detail just exactly how you applied the principles of the A. T. & T. circular in that central office at Cleveland to effect the result that you got there?

A. I did not say that I personally did that. I said our operating people did it. I got in on the matter because it brought to light the fact that we had an excess of equipment in that office and that was of particular interest to me in connection with my work. However, I will be very glad to tell you what the operating people did to effect that saving.

Q. Alright, go ahead.

A. The first thing our division traffic superintendent did

was to have some peg counts made and closely supervised so that they would be accurate. Having obtained what he considered a correct peg count showing the total calls for the day and the distribution of the calls by half hour periods and having arrived at the units, that is the traffic units, corresponding with those calls, by means of the application of the proper factors for the trunking which they found when the peg counts were made he determined the operators required during each half hour period of the day, and the number of supervisors required during the same period. [fol. 9623] He then checked these requirements against the people actually on the force and found that the force had not been adjusted to the traffic, and by making the readjustment to conform to the traffic obtained he decreased the force by more than 25 per cent.

I am sure it was more than 25, but I cannot give you the exact figure although I think the information is available.

Q. Well, now, that came to your attention particularly because it released a certain amount of equipment; how much equipment, do you recall?

A. I think I have something on that. There were 78 positions installed in that office at the time and the peg counts indicated that they needed 40.3 positions. In other words, there was a surplus of approximately 38 positions, which we planned on using in connection with the consolidation.

Q. How do you propose to use them?

A. This office will be made part of the Cleveland exchange. We are going to consolidate the Bell and State offices and this equipment will be used to take growth. In fact, today we have some Bell stations working in that office.

Q. That is, you leave the equipment where it is with the expectation you would fill it up by later developments?

A. Yes; fortunately the merger makes it possible to use the equipment but if there had been no merger I don't suppose the equipment would have ever been used.

Q. Unless it was moved out and put in somewhere else?

A. Taken out and relocated.

[fol. 9624] Q. Now you testified to a number of instances where you had had different men from the General Staff come out here about various problems. I want to ask you about one or two of those instances. You mentioned Mr. S. H. Brown who came out here in connection with the

fundamental plan you were making of your toll plant, getting his assistance in the solution of certain problems that arose in that connection. What was the problem you wanted to consult him about?

A. It was quite a difficult problem. First, we wanted to get his advice as to the organization required for a fundamental plan of the magnitude we were to make.

Q. What was that fundamental plan? What did it cover?

A. That fundamental plan will cover the State of Ohio, excluding Cincinnati, and it may develop that the Cincinnati Company will work with us in connection with the traffic over the boundary line. It will cover practically the entire State of Ohio.

Q. What particular thing was it you wanted to consult Mr. Brown about in that connection?

A. As I said before we wanted to get his advice as to the size of the organization required for this work.

Q. That is for the making of the plan?

A. That is right.

Q. Yes.

A. As to how large a section we should study initially; that is, making a plan for the entire study at one time would be a very unwieldy job; I do not think we could do it: so we wanted to divide the study into three sections and we wanted to get his advice as to the size of those sections. [fol. 9625] We wanted his advice as to the method of determining which of the exchanges should be toll centers in the ultimate, just how we could go about to determine where we should center the smaller offices.

Q. What do you mean by a toll center?

A. I mean an exchange where toll traffic is handled. It is not advisable to handle toll from every exchange in the State. Take a one position board; that may not always be covered—say an agency office, that may not always be covered; we cannot afford to terminate a toll circuit in an office of that kind because they are not administered efficiently; an operator at a distant point may ring in and not get an answer for a minute or two or three minutes. That is a waste of toll circuits. Then again it is impractical to let operators in the real small offices work out on the toll lines; that is, go all over the country, as the originating operator must do, and it is not always economical to buy

toll equipment for these small offices. It is rather costly and they may not be used efficiently.

Q. Then you might by having these tributary offices call into a toll center make the connection in that way?

A. Yes.

Q. Alright; what else did you consult Mr. Brown about?

A. That was about what we covered while I was in conference with him. Now, as I recall it, I left Cleveland and came down here to a hearing and I think I testified at the time that Mr. Brown was going to continue in Cleveland.

Q. Yes, that is true.

[fol. 9626] A. In connection with that matter upon returning to Chicago——

Q. To Cleveland you mean?

A. To Cleveland, that is right. On returning to Cleveland my toll line engineer reported the balance of the conference to me and they went into detail as to the methods to be used. They reviewed the A. T. & T. circular which covers toll fundamental plan. I do not recall the number of it. They reviewed the various forms required, discussed the amount of past data that should be collected in order to project future requirements. In fact, in that conference they covered practically all angles of toll fundamental plan more or less in a general way.

Q. Now were these things that you consulted him about matters that were not covered by the circular?

A. Some of them, and the circular was discussed with him in detail, so that we were certain to have a clear understanding of it. And he reviewed the experiences that other companies have had in connection with direct toll fundamental plan.

Q. The making of the toll fundamental plan for the state is rather an unusual job, is it not? It is not an everyday matter?

A. Oh, you would not make them every day, no.

Q. Nor very frequently, not every year nor every five years?

A. Well, I don't know how often it would be necessary to make a toll fundamental plan; I think it would depend somewhat on the developments in the territory after your fundamental plan had been made.

Q. Now Mr. James and Mr. Darrah and Mr. Rappleigh

[fol. 9627] came to Cleveland at your request to discuss and assist in connection with a toll tandem board?

A. Yes.

Q. What is a toll tandem board?

A. A toll tandem board is a centralized board that is used for tandem trunking calls from one exchange to another. The board I have in mind is the one which we have provided at Cleveland and is used in connection with an AB toll method which we are introducing. We have trunks from each Cleveland central office to this tandem board.

Q. What do you mean by tandem trunking?

A. I have in mind this, that ordinarily we have only two offices in the connection, the originating office and the terminating office; however, it is not always economical to provide direct trunks between each pair of offices; therefore we have an intermediate point where the trunking is done. This intermediate point in this case is the tandem board and we have trunks from each office to the tandem board; that is, in-coming to the tandem board; and then out-going we have toll circuits to several of the outlying offices.

Q. Then the message would go through two boards——

A. No, the call would be originated by a subscriber, say, in the main office. The A operator who answers that call upon being given the order goes over a trunk to this tandem operator and gives her the called point. The tandem operator then makes connection to a toll circuit to the called point; say it is Bedford. The Bedford operator answers and completes the call to the proper station. The Cleveland main [fol. 9628] operator times and supervises the call.

Q. Now you had these three men out here in connection with the engineering of that board; is that correct?

A. That is right.

Q. That is something that was not covered in any of the circulars?

A. It is referred to in circulars but we had a problem that we wanted to meet quickly, and I felt as if we could expedite it by having these men come out and go over it with us in detail, because we had never engineered a tandem board. And Mr. Rappleigh stayed for several days after Mr. James and Mr. Darrah left and actually instructed us and assisted us.

Q. You testified as to receiving the assistance of Mr.

Mogarith in the checking of machine switching service observations. What sort of an operation was that? Why was it necessary to secure his assistance on that?

A. Well, the taking of observations on machine switching equipment is comparatively new. I never heard of observations being taken of machine switching equipment until the A. T. & T. Company developed an equipment and a method of so doing. We asked Mr. Mogarith to come out. He is a specialist, by the way, on the general subject and has trained switching observers all over the country. We asked him to come out and assist us in the training of machine switching observers at several points in Ohio, such as Youngstown, Massillon, Alliance and Columbus.

Q. Well, now, on page 1006 you testified with reference to a personal conference with Mr. Van Hagan in connection [fol. 9629] with cut-over plan at Youngstown. What was your particular problem there?

A. We had several problems there. One was the providing of special equipment for use immediately following the consolidation. That is, we cut into machine switching equipment in the neighborhood of 16,000 manual stations.

Q. That is, you connected manual with automatic stations in that way?

A. No, we cut these 16,000 stations from a manual board into machine switching offices, provided dials at all of the subscribers' telephones and naturally it takes some little time for a subscriber to get familiar with the dial, and it was our understanding that cut-overs of that kind resulted in a large amount of assistance being required of the subscribers, and we conferred with Mr. Hagan with regard to his experience in New York, Boston, Philadelphia, Seattle and Omaha, and I don't know—any number of places—his experience as to the requirements during the first week or two after the merger. He gave us considerable information along that line which assisted us in preparing a traffic order for the special equipment. He also reviewed with us the assignment of lines and stations in the mechanical equipment. It is quite necessary in mechanical operation that the subscribers' lines be pretty evenly distributed between the various units of equipment so that all the trunks will not be found busy oftener than necessary. Mr. Van Hagan, in connection with the machine switching

cut-overs and matters of that kind, assisted us in our problem.

[fol. 9630] Q. What is the method pursued in getting the assistance of these General Staff experts on these various problems? Who is it that makes the request that they come out and give you this assistance?

A. In the two cases referred to—that is, Mr. James, Darrah and Rappleigh came out on the tandem board and Mr. VanHagan came out on the machine switching, and also in the case of Mr. Mogarith, who came out on the machine switching observing, I personally requested their services.

Q. That is, you personally wrote to the A. T. & T. offices in New York?

A. Either that, or called on the telephone. I do not recall. In other cases Mr. Carroll may request a man to come out and help some one in the traffic department, either myself or one of his other men.

Q. Now it is not necessary for you, as a subordinate of Mr. Carroll's, to have Mr. Carroll make this request or secure his approval of it before you make it or anything of that kind? You go directly to the A. T. & T. organization?

A. Unless I think it is something that he would like to get in on personally, I make the arrangements myself.

Q. You use your own judgment about that?

A. Pretty much.

And thereupon the further hearing of this matter was adjourned to Tuesday Morning, May 27th, 1924, at 10:00 o'clock.

[fol. 9631] Tuesday Morning Session

May 27th, 1924.

And thereupon the further hearing of this matter was resumed pursuant to adjournment.

Present:

Same counsel as at previous session, and T. H. Miller and J. E. Kinnison, on Behalf of the City of Canton.
Carl F. Shuler, on Behalf of the City of Cleveland.

And also W. T. ANTHONY, resuming the stand for further cross-examination, continued his testimony as follows:

Cross-examined by Mr. McConnaughey:

(Record read.)

Q. I think you also testified, Mr. Anthony, that there were numerous occasions when the division traffic men have gone to the General Staff of the A. T. & T. for information of various kinds; is that correct?

A. Why, I do not recall just how I stated that, but it is true that the A. T. & T. General Staff people go into the field and assist the division traffic superintendents in solving their problems.

[fol. 9632] Q. And that without any consultation with you as the head of the traffic department or with Mr. Carroll as your superior?

A. Well, sometimes Mr. Carroll will suggest that an A. T. & T. man go to a certain exchange in Ohio and assist the local people. At other times Mr. Michael——

Q. Who is he?

A. He is the general supervisor of traffic, or Mr. Eckley, who is the general supervisor of toll traffic, will request A. T. & T. people to visit a certain exchange for the purpose of assisting the local people. Then again the division traffic superintendents may call on New York, either through the general office or direct, and request assistance on certain of their problems.

Q. And in that case you would know nothing about it perhaps?

A. No, I ordinarily do not get in on those visits unless they affect engineering. Sometimes I may sit in their conference if they do not affect engineering. But any requests for assistance in connection with operating problems are not made through me.

Q. Don't the division traffic men have to do with engineering problems?

A. Indirectly. Practically all of the traffic engineering is done in Cleveland. As I stated yesterday, we handle in Cleveland the engineering for all common battery offices. The field people, that is the division traffic superintendents, handle the traffic engineering for the magneto exchanges.

Q. Those are the smaller exchanges?

A. Yes, sir, the one, two and three position boards.

[fol. 9633] Q. Now are there any instances, Mr. Anthony, when people from the General Staff come to Ohio without

being requested by the Ohio organization for the purpose of talking with you about local problems?

A. Yes, quite often they do. Last week—week before last Mr. James called me and told me he would like to come out to Cleveland and discuss with us a little further the toll tandem problem I mentioned yesterday. That is a rather complicated job and after his visit out here two or more months ago in studying the matter in New York further points developed which they thought it well to discuss with us in conference, and he came to Cleveland last week. I was not there. I was at this hearing and I did not confer with him but my people I think spent two days with him.

Q. Do you recall any other instanees where they have come out without your invitation?

A. Yes, I know of a case where Mr. Ramon, who is an assistant to Mr. Allen on toll problems, came out to Cleveland some time ago to discuss with Mr. Eckley some toll problems at Akron and Canton. I know he visited both of those exchanges and there may be others; I do not recall.

Q. Just what was the nature of the problems that he came out to discuss?

A. I do not know, Mr. McConnaughey. That is out of my line; but I happened to be in Mr. Eckley's office when Mr. Ramon came in, and from their conversation I understood Mr. Ramon had gotten in touch with Mr. Eckley and suggested that he would like to come out and confer with him on some problems that they had down there, but I did not [fol. 9634] enter into the conference at all. Mr. Mogarith whom I have mentioned in my testimony, came out to Cleveland on his own initiative to assist us in our machine switching service observing. We had previously requested Mr. Mogarith to come out and he has made several visits to Ohio, and the last visit he made on his own initiative. He got in touch with us and suggested that he would like to come back and follow up the work which he did on his previous visit.

On this machine switching service observing, as I said before, it is a new problem with us. In fact it is a new problem in the telephone business and there is considerable involved in it. It provides a means for us to know what kind of service we are giving our subscribers in our machine switching offices. We have installed in several of our machine switching offices machine switching service observing

equipment which was designed by the A. T. &. T. Company and have assigned to each of those offices an observer who sits at this board and observes the progress of the calls originated. She gets in on the call when the subscriber starts to dial. On a tape associated with that board the number that the subscriber dials is recorded. She follows the connection through; if he encounters any machine trouble in going through the switches the observer is aware of this. Record is made of the difficulty he encountered. Later on that information is used by our plant people in checking up the equipment. It provides a means for determining where, in the equipment, the subscribers are getting into trouble. It provides a means for determining what per cent [fol. 9635] of the calls are not completed due to subscribers' lines being busy, due to the called station not answering, due to all trunks in the various paths being busy.

It gives us a general picture of the service. Those observations are summarized at the end of each week and then again for the entire month. We furnish a copy of the result to our plant department. They analyze the calls that were not completed. Such an analysis provides for information as to where the plant may not be functioning properly. The traffic department analyzes the results of the observations in order to determine whether or not the subscribers have been properly educated to dial correctly, whether they are using the latest issue of the directory. We often find that a subscriber does not use the new issue of the directory but calls from memory, and numbers are changed occasionally, of course; and he may be getting poor service because of the fact that he is not consulting his latest directory but is calling from memory.

We get that information from our observation which enables us to get in touch with subscribers, to make sure that he has not lost the last directory and to make him know that to get good service he must use the latest directory.

It provides the traffic department with means of knowing whether or not the load has been properly distributed between the various units in the office. I mentioned yesterday Mr. VanHagan coming out here to help us on the assignment routine in connection with transferring subscrib- [fol. 9636] ers from a manual office to the new machine switching offices at Youngstown. Now that works right

into the service observing. The assignment of lines in connection with the Youngstown merger was very complicated and that is why Mr. VanHagan made several trips out here.

In the first place, taking the Bell office, the in-coming equipment is divided into 140 units, each unit having 100 terminals. Now on an average there are eight connectors per 100 subscribers. I mean by a connector the final switching in the train that completes the call in the economical office. In dividing that equipment up between such small units as say eight trunks in a group unless we are very careful we are going to distribute our lines and stations so that some boards are overloaded and some are underloaded.

Now overloaded boards mean poor service to the subscribers for the reason that they get as far as the connector board, all trunks are busy and no further service. In Youngstown we have several classes of service. We have P. B. X. trunks, measured service lines, flat rate lines, consisting of individual business, individual residence, two-party, four-party. Now each one of those classes has a different average calling rate. In setting up the assignments for Youngstown we compared with Mr. VanHagan as regards the method used at other points in distributing these lines over the 140 boards so as to use the equipment to the greatest efficiency and yet not making our assignments so that we would encounter more than a normal number of busy trunks resulting in a subscriber not getting through.

[fol. 9637] That meant we had to consider the traffic originated by each of these classes of service, more than six classes.

It was also necessary for us to take into consideration the different types of business lines. For instance, we would not want to put in any one board several grocers' lines because as a rule the traffic to a grocery, the maximum traffic to grocery stores, comes at about the same hour of the day. It would be better to mix with the grocery lines other classes of subscribers that would have their maximum traffic during other hours of the day.

It might be interesting to note that the results of this assignment work are very good. We have continuous records from Youngstown since the consolidation and we had only two numbers out of 140 that were overloaded after

the first two days. The first two days we had a very heavy load at Youngstown, due to the large amount of curiosity traffic; probably we had a 40 per cent curiosity load. Since that died down we found that there were only two boards that were overloaded to the extent that required any adjustments in the terminating of the lines.

Q. These are the things that Mr. VanHagan assisted you in?

A. That is one thing Mr. VanHagan assisted us in. He also assisted us in determining how much special equipment we would require. For instance, at Youngstown we have a special code for a subscriber to use if he is unable to dial. That is what we call the zero call, or Operator. If he does not know how to dial he pulls the dial around to the hole [fol. 9638] that says "Operator"; we have a number of operators to receive those calls. They determine what trouble the subscriber is having, and if he is unable to complete the call himself by means of equipment which he has she completes the call for him, and then if we find that certain subscribers are calling this operator regularly we send a representative to visit that subscriber and explain in more detail the operation of the mechanical equipment.

Mr. VanHagan also assisted us in laying out our intercepting equipment. By intercepting equipment I mean equipment that is used to take care of lines which have been disconnected or on which the number has been changed.

He also assisted us in the issuing of instructions necessary for the special operators on duty immediately following the cut-over.

Another problem we had in connection with the cut was to see that we did not cut off any emergency calls that might have been up at 11:45 on Saturday night when we made the cut. That is, usually there are a few emergency calls up; now it would be rather serious for us to cut those subscribers off. When we cut these 16,000 stations from one station to another Mr. VanHagan, through his experience of other cuts of similar nature, was able to tell us the best means of providing a temporary connection to take care of those emergency calls.

There are, oh, a number of other things that he helped us on in connection with that cut over. It was a rather complicated job; in fact, the most complicated job any company [fol. 9639] has ever had, as I understand it.

Q. What do you mean by this curiosity load that you speak of there?

A. By that I mean, Mr. McConnaughey, this. For a number of years the Bell subscribers in Youngstown have had manual telephones. Now when we changed to automatic equipment we provided a dial at each subscriber's station. It was something new and the experience at all automatic cuts has been that the first few days the subscribers originate a large number of calls just to see how the thing works. For instance, the school children find that before going to school, say at eight thirty or a quarter of nine, during our regular maximum period, that they can use the dial telephone. They will call one of their school chums and see if they can get through and hang up and then the other boy will call him back, and usually results in an excess or an abnormal amount of traffic, to the extent of 25 to 40 per cent, and at Youngstown we had a further reason for this abnormal traffic, and that was, in addition to cutting machine switching equipment into the Bell System at the same time we consolidated two systems that previously had not been connected. That meant all Bell subscribers could call State subscribers, and vice versa, and that resulted in a large amount of so-called curiosity traffic.

Q. What were these emergency calls that you made special provision for?

A. Well, for instance, a subscriber might be calling the police department, might be calling the fire department giv- [fol. 9640] ing instructions, might be talking to a doctor, or whatnot.

Q. That applied simply to the calls that happened to be open at that particular time?

A. That happened to be in progress at a quarter of twelve. That is, this cut was planned so that at 11:45 the plant department were to be ready to start cutting the 16,000 lines from manual to automatic. And I think it took eight minutes to make the cut. They cut the 16,000 lines in eight minutes. A large amount of preparatory work had been done to make that possible.

Q. How was that done?

A. Well, that is a plant job. I do not know that I can give you all of the details of it, Mr. McConnaughey. For months prior to the consolidation the plant department had been making their plans. For instance, the traffic department

had made the assignments in the Mechanical office. It was necessary to change every number in the Bell System and we had furnished the plant department with the number of each subscriber we have after he was in the machine switching office.

Now that meant that, for instance, a number that was Main 1234 on a manual basis would be 34567 on a mechanical basis. The plant department had run these more than 16,000 jumpers over weeks before the cut.

Mr. Burr: Jumpers are wires, are they not?

The Witness: Yes, wires between frames. They were all ready to solder it down.

Q. That is, there had to be one of those jumpers for each line?

A. Yes, and they had a schedule so that this employe was [fol. 9641] to take this list, another employe to take this list, another employe to take that list, etc; had the work assigned so that each man had about the same amount of work, and they completed this cut in eight minutes.

Q. What was the cut, just in a word; you cut a wire and soldered another one?

A. That is right; the jumpers were all run; it was a question of soldering down the connection.

Q. How many men did it take to do it?

A. I don't know; they had a big force of men down there. The terminal room was so crowded I did not get into it and I would have bothered them had I gone in. But they had a large number of men.

Q. That is a little aside from the inquiry but our curiosity got the better of us. Now have you stated all of the instances you have in mind where the A. T. & T. men came out to Ohio on their own initiative for the purposes of consolidation?

A. If I had time I expect I could think of dozens of them

Q. It happens very frequently, does it?

A. Oh, yes, they often—if they think that they can help us they do not hesitate to get in touch with us and offer their services. That is, we work together very closely.

Q. Do they sometimes make inquiries to find if there is anything bothering you that they can help you about?

A. Yes, usually if a man comes out on a specific problem—we will say that conference lasts a day, often late in the after- [fol. 9642] noon when we are winding up he will ask if we have anything else that he can be of service on, and many

times that results in his staying over the next day and working on other problems.

Q. Do they sometimes come out here with entirely new things to talk to you about?

A. Yes, sir.

Q. To inform you about, to instruct you about?

A. Yes, sir, they often come out before they complete the development of a project they have in mind to determine to what extent we can use that development and talk it over.

Q. Now you mentioned an instance where Mr. Blackburn visited New York in the matter of equipment problems at Youngstown. Who is Mr. Blackburn?

A. Mr. Blackburn at that time was machine switching traffic engineer.

Q. Why did he go to New York rather than have New York come here, as seems to be the common practice?

A. Well, as I said in my direct testimony, the New York people come out here to visit us oftener than we visit them for the reason that we like to get as many of our people in on these conferences as possible. Now in that particular case Mr. Blackburn went to New York because the problem he had involved not only the traffic engineering but it involved equipment engineering and it involved the operating end of the game. That meant that at least three A. T. & T. men should sit in on that conference. We felt that in that case it would be better for Mr. Blackburn to go to New York on that problem so that he could confer with as many A. T. & T. people as was necessary. However, if we had made the [fol. 9643] request for an equipment engineer, a traffic engineer and an operating man to come to Cleveland our request would have been granted.

Q. Who paid your expense of that visit to New York?

A. To New York?

Q. Yes.

A. I do not know definitely.

Q. What is the practice, do you know?

A. Why I do not know how those funds are maintained. I know that when we make a trip any place we send through a voucher stating the city we visited, and detail our expenses. For instance, my voucher goes to Mr. Carroll, my superior, and I think that it eventually goes to the auditor. Now I am not familiar with the bookkeeping methods.

Q. You don't know whether it is finally passed on to the A. T. & T. expense account or not?

A. No, I could not say, Mr. McConnaughey.

Q. You yourself visited New York in July of 1923 with reference to the unification plans at Columbus and Youngstown?

A. Yes, sir.

Q. Why did you go to New York rather than have them come out here in connection with that problem?

A. Well, that was a very similar situation to the one I just outlined in Mr. Blackburn's case. A unification involves every department. Before we can settle many traffic engineering matters we must confer with the equipment engineers, with the commercial engineers and with the operating people. And the Columbus job involved all of those departments. As I recall it we conferred with Mr. Farman, [fol. 9644] who is local traffic engineer; Mr. Charlesworth, who is plant engineer; Mr. Roberts, who is one of Mr. Charlesworth's assistants; and Mr. Jacobson, who is in the development and research department of the A. T. & T. Company; Mr. Stimson, who is the machine switching traffic engineer of the A. T. & T. Company; Mr. Ferguson, who is an assistant to Mr. Stimson. Oh, I don't know, there were quite a number of people in on that conference, because it involved this big unification plan at Columbus and these people that I mentioned had had experience in connection with other consolidations similar to the Columbus situation.

Q. Does the Columbus situation differ materially from that at Youngstown?

A. Oh, yes. Yes, at Youngstown we had two Bell units, manual units. We had a machine switching system in the State office; we had a comparatively small manual office at Struthers, which is part of the Youngstown exchange area, and a magneto office at Lowellville, which is also part of the Youngstown exchange area.

Now in Columbus we have a much larger city, big multi-office city, involving a large number of manual offices, involving at the present time a large machine switching system. In Columbus we have a large multi-office problem.

In Youngstown, while it was a very complicated job, it is what we would call a small multi-office plant.

Q. It was sufficiently different so that your experience at Youngstown would not enable you, without A. T. & T. assistance, to go through with it?

A. No, sir.

Q. Now you also made a visit to New York in January of

[fol. 9645] 1923 in connection with short haul toll problems at various points and also in connection with the Columbus merger. What do you mean by short haul toll problems?

A. By short haul toll problems I mean the handling of short haul toll traffic. That is, there are several methods of handling toll traffic. There is the single ticket method, which involves handling the toll call in a regular toll office; that is, a subscriber wishing to place a call to a point which is reached via the single ticket method calls Long Distance. The Long Distance recording operator takes the details of his call. That ticket, by means of a special mechanical conveyance or a messenger, is sent to a special position at what we call the outward board connecting to its destination.

For instance, in Columbus we try to handle all of the traffic to Cleveland at one position, or if we have more traffic than can be handled by one operator we will spread it over two, three or four consecutive positions. The same with traffic whose destination is, say, Toledo. That is segregated at one or more special positions. That operator when she is ready to work on the call goes back over the special toll switching trunk and picks up and holds the calling subscriber's line so that when she reaches the called point she will not encounter a busy line at the calling end. That is, we hold the calling subscriber's line for a short period while we are working out over the toll circuit. That, in brief, is the single ticket method.

Now another method is what we call the two number toll [fol. 9646] method. The two number toll method is used on shorter haul traffic than the single ticket method. It involves less operating expense. Under the two number method a subscriber wishing to reach a point that is handling via the two number method gives his call to his local operator. The local operator passes the calling and called numbers to a two number operator. The subscriber remains at his telephone. And I might say here that under the single ticket method the calling subscriber hangs up his receiver after he places his call and is then called back, while under the two number method the calling subscriber remains at his telephone. The two number operator goes back over a switching trunk and makes connection to the calling subscriber's line.

At the toll switching position when the toll switching operator gets an order for this line she will test and find the line is busy because the calling subscriber still has the

receiver off of the hook. Therefore our two number operators in calling a number of this kind, in passing the number, say "without", that instruction meaning that the toll switching operator will not test the line but will plug in right over the busy. The two number operator then takes up a circuit to the distant point and completes the call. That makes for a much faster service than the single ticket method and results in operating economy.

Q. What sort of calls does that apply to?

A. Pardon me?

[fol. 9647] Q. What sort of calls does that apply to?

A. What distance?

Q. Yes.

A. I was just going to explain that, Mr. McConnaughey. The reason that the two number method cannot be extended as a universal proposition is that it is necessary to provide toll circuits on a more liberal basis. That is, if we ask the public to stay at their telephone in placing a telephone call we must provide sufficient circuits so that we complete the call on the first attempt in the majority of cases. Now we could not afford to provide circuits on such a liberal basis where the haul is very long on account of the big investment, so that we limit this method to a distance of around 30 miles. In some cases we will go beyond, if there is a large community interest factor between two places or if we have cable facilities.

Another toll method which is faster and more mechanical, than the two number method where it applies is called the AB toll method. Under the AB toll method a subscriber placing a call to a distant point that is reached via the AB method gives the called number to his local operator. She has appearing directly in front of her circuits to this distant point, or reaches the distant point by going through a toll tandem board which I referred to yesterday.

The A operator writes the ticket and supervises the call and she is the only operator in on the connection at the originating point except the tandem operator, in case we have introduced a tandem board in the connection. It is not necessary for her to order the subscriber's line be-
[fol. 9648] cause he talks right over the connection. That is, there is just the one pair of cords, the answering cord being plugged into his line and the calling cord into the

toll circuit or into a trunk to the tandem board if the tandem method is in effect. As I said, that method is faster and more economical from an operating standpoint than the two number or the single ticket methods. This method is used on traffic—is used where the distance does not exceed about 30 miles and where the local conditions are such that this method can be adopted or proven in over the two number method.

In a single office city this method we can make a very good case for because we can give the A operators access to the toll lines. However, in a multi-office city it is not practical to provide circuits in each office.

Take Columbus, for instance, with six offices, it would not be practicable to give each one of those offices separate toll circuit groups to the outlying points. So that in a multi-office city we are confronted with this problem, shall we introduce the AB method and use a tandem board, or shall we introduce the two number method?

Now we study each case on its merits and reach a decision in that way. As I stated yesterday we have introduced at Cleveland the AB toll method and have a tandem board in operation.

Q. Is that the only place where you have a tandem board?

A. That is the only place at this time. However we are considering a tandem board at Columbus and Toledo and Dayton. We may later consider a tandem board for [fol. 9649] other exchanges.

Q. Well, now, I was asking you about your visit to New York in January of 1923. What was the particular problem that you went there to take up?

A. Well, just a discussion of the details of some of the things I have just mentioned, Mr. McConnaughey. The A. T. & T. people have followed the short haul toll methods very closely. There is a large development of AB toll traffic around New York City. They have a very fine field for it because they have several large cities in New York State, and over in Jersey. In Chicago they have had also for a number of years a good field for the AB toll and for the two number method.

I went to New York to discuss with the A. T. & T. engineers the question of provision of toll circuits; that is, how elaborately we should provide our toll circuits. I

discussed with them the operators' loads for these various methods. They have developed operators' loads for various toll operating methods. We go together with the equipment engineers of New York to discuss the possibilities of multipl-ing toll circuits in a local board. That is quite a problem. Our toll lines as a rule are of the magneto type. In our larger exchanges we have common battery operation and it is not possible to use common battery cord circuits in making the connection to a magneto toll circuit.

However, the A. T. & T. Company, as we understood, had developed a special toll line jack, some sort of relays in this toll line circuit, that would make it possible to connect any ordinary common battery cord circuit on a local [fol. 9650] subscriber's switchboard with a toll line of the magneto type, and we were interested to know what this equipment would cost and where and under what conditions it would prove in. That is why I visited New York instead of having the New York people come out here, because more than one department was involved in the problem.

Q. Now you are planning some improvement in this short haul toll traffic in your territory and you went there for instructions?

A. That is right.

Mr. Laylin: I just wanted to ask Mr. Anthony, in the AB calling and also two number, as to those two, are they used in Columbus on the old Ohio Bell lines at all?

The Witness: On next Monday or a week from Monday—I think it will be this coming Monday—we will introduce in both the Bell and State systems the two number toll method to certain cities outside of Columbus. I think we are to run some newspaper ads this week advising the public that this method will be available and instructing them as to how they should place their calls.

By Mr. McConnaughey:

Q. Where else in Ohio is it in use?

A. We have had a two number method in use in Cleveland for quite a long time. I cannot say just how long, but the two number method was in effect when I came to Ohio in 1921, and as I just stated we are now introducing an improved method, which is the AB method; that

is, improved so far as cost elements are concerned. The two number method is in effect at Canton, Ohio. It is in effect at East Liverpool. The AB method is in effect at [fol. 9651] Youngstown. We made it effective when we consolidated, did all the work at one time—and other points; I cannot recall offhand all of the points. But we are getting the AB or two number method introduced at many other points.

By Mr. Laylin:

Q. Isn't it true that a method analagous to the number two method has been used on the Ohio State lines for short hauls in Columbus for several years?

A. I don't know that it has, Mr. Laylin.

Q. You don't know that?

A. No, sir; I know we are going to introduce it in the State System on either this coming Monday or a week from Monday.

Q. What have they been using here, do you know?

A. They have been using the regular toll method.

Q. Don't you know that you can make a call and get direct through to the local operator at the called point over the Ohio State? For instance, if I were calling Worthington or some outlying county towns here, that I can get right through immediately and get the connection made?

A. I think there has been some toll line dialing in the State system in Ohio where the subscriber dials——

Q. That has been for several years, has it not?

A. There was some of that when we took over the Ohio State property.

Q. But you don't know how long?

A. No, I do not. We have found it advisable to discontinue that method as we merge these various points for the reason that the toll line dialing method in use in the Ohio State system killed the possibility of phantom circuits. For instance, if there were two circuits between [fol. 9652] two cities and toll line dialing was in effect, it is not possible to create the third circuit or what we call the phantom circuit.

Now our chief engineer's office made quite an exhaustive study of that matter and it developed that it was not economical to lose the phantom possibilities on these

circuits because toll line construction is very costly. So that we have discontinued that method as we merged these various points in order to make our toll plant more efficient.

By Mr. McConnaughey:

Q. Then how do you put it back in effect in this new development?

A. Beg pardon?

Q. How do you put it back in effect in this new development?

A. Which new development?

Q. This AB system you put in effect?

A. That is not toll line dialing. I thought Mr. Laylin had in mind where a dial is used to complete a call at a distant point.

Mr. Burr: That was it, wasn't it?

Mr. Laylin: No; this is what I think is analagous to your two number system; I am not very clear on this—whereby you call long distance and are immediately connected with the operator at the distant point. I think that is the practice, if I am not mistaken, that has been in effect here on the Ohio State now.

The Witness: If such a practice is in effect I am not familiar with it. I hardly think it is. Mr. Allen did refer in his testimony to such a method which was in use from [fol. 9653] the Neil House but I think he said that it had been discontinued and I am not familiar with any such method as that.

By Mr. McConnaughey:

Q. Well, now, this single ticket method, how generally is that used in Ohio?

A. Oh, practically all of the traffic that cannot be handled on an AB or two number method is handled via the single ticket method.

Q. That is not peculiarly a short haul proposition?

A. No, that is a long haul.

Q. Yes.

A. For instance, calls from Columbus to San Francisco are handled via the single ticket method unless they are special calls that do not lend themselves to that operation, such as messenger calls.

Q. Now the instances you have named of consultations between your organization and the A. T. & T. General Staff are typical of the method in which these things are carried out in the ordinary course of business, are they?

A. That is right.

Q. Yes. Now going back to the single ticket method. You used in your calculation of savings due to the adoption of that method a figure of 5,519,900 calls. What proportion of the total toll calls is that?

A. You have in mind what proportion of the tollboard calls, not the AB or two number?

Q. I am not interested particularly in what it is a proportion of, but I want to know what that represents of your traffic?

A. Well, that represents all of the calls handled by the [fol. 9654] Ohio Bell Company on the single ticket method.

Q. Do you keep a separate record of them as single ticket calls or how do you get at that as the number?

A. We get at that in this way, Mr. McConnaughey. We keep a monthly record of the tollboard calls handled and then we have supplementary records by classes. For instance, as I just said, message calls are not handled by the single ticket methods. Collect calls to pay stations are not handled by the single ticket method. We have supplementary records of that traffic and this figure which I have quoted represents only traffic that was handled via the single ticket method.

Q. It would not include the AB calls?

A. Oh, no, it would not include the AB or two number.

Q. What is the total number of calls represented in that period for which you took the 5,519,000—the toll calls?

A. I haven't got that. All I have is the single ticket calls.

Q. Now have you the calculation that you made of the savings on that method before you?

A. Yes, sir.

Q. You showed in your analysis of savings a saving per call in operating and switchboard expense of 9.52 cents and in toll circuit expense of .81 cents?

A. That is right.

Q. What is the total cost? That is an average, as I understand it.

A. Well, that represents the average saving per call handled by the single ticket method as against the cost

which would have obtained had we handled the traffic on the two ticket method.

[fol. 9655] Q. How did you determine that that was the saving?

A. Well, I determined it in this way, Mr. McConnaughey. We know what the operating labor is on a single ticket call, on the average single ticket call. We know what the operating labor is on two ticket traffic. Now we took this actual traffic and by taking into consideration the operating saving under the single ticket method we arrived at these figures you have quoted.

Q. $9.52 and 81 cents?

A. No, 9.52 cents and .81 cents.

Q. Now did you determine first the cost of the two ticket call?

A. No, I determined what the saving in operating labor was under the single ticket method as against the two ticket method.

Q. Well, what was the saving in operating labor? Is that determined by the difference in time that it takes to make the call?

A. Yes—not the time it takes to get the subscribers talking but the difference in the amount of actual labor that an operator spends on the two kinds of calls.

Q. Isn't that determined on the time basis?

A. It is determined on the basis of work units which we have set up for these various classes of service as explained by Mr. Allen. In other words the coefficients, the traffic coefficients.

Q. What are the elements that enter into that calculation? How many of these units were used under the old system and how many under the new?

A. I think in my previous testimony I stated that for [fol. 9656] the items of work required in completing a call where the two ticket method effected a saving, we saved 16.11 units per call. There is no saving on the recording operator's labor on a two ticket call—on a single ticket call over a two ticket call. She does the same amount of work.

Q. That is, the recording operator is the operator at the sending station who makes the original record, the first record?

A. That is right.

Q. She makes that record now under the single ticket method?

A. Just as she did under the two ticket method. However, the single ticket method results in a saving in the outward operator's work for the reason that under the single ticket method it is not necessary for her to transmit to an operator at the distant point the details of the call. Under the two ticket method the outward operator would ring the distant office. The inward operator would answer that call. The outward operator would ask for the ticket operator. The inward operator would transfer that call to a ticket operator by means of pressing a button associated with the toll line or by going over a trunk to the proper position, and asking the ticket operator to pick up a call on circuit number so-and-so. Then the outward operator would transmit to this ticket operator at the distant point all the details of the call.

Q. That is, who was calling and who they wanted?

A. Yes, sir, that is right, and any other instructions that might be given. That is, the subscriber might say he would [fol. 9657] talk to Mr. Smith or Mrs. Smith or some one else.

Q. Yes.

A. Now all that time the outward operator is engaged; she waits on the ticket operator to take the details of the call and then they check to make sure that their records are the same. Under the single ticket method the outward operator rings the distant point; the inward operator answers; the outward operator gives her the number of the called station; the inward operator rings, the subscriber answers and the outward operator has the connection completed.

Now that single ticket method results in a saving in the outward operator's time. At the distant point under the two ticket method there are two operators in on the connection, first the inward operator who answers the signal as it comes in from the originating office and then the ticket operator who answers the signal as it is transferred by the inward operator, and she takes the details of the tickets and checks back to the outward operator and then endeavors to complete the call to the proper station.

Under the single ticket method the only work involved is for the inward operator to receive the number of the called station and make a connection to that station and she is through. So a big saving in operating work at the distant office results with the single ticket method.

Q. Now you get at this $9.52 because that is the cost of 16.11 units of work, is that it?

A. Yes; it should be 9.52 cents. I think you said $9.52.

Q. 9.52 cents?

A. Yes, sir.

[fol. 9658] (Previous question read.)

A. That is the cost of 16.11 units of work plus the charges on the excess switchboard use.

Q. That is in the other item of .81 cents, isn't it?

A. No, .81 cents represents a saving in the toll circuit; that is, the single ticket method results in less waste circuit time than the two ticket method. If you recall, I detailed the passing of this call to the distant point. All that time the circuit is held, whereas by the single ticket method that time is saved. Now the .81 cents represents the saving in operating expense and equipment.

Q. Central office equipment?

A. That is right.

Q. Well, now, how did you get at the saving in central office equipment? How did you figure that?

A. That is figured in this way; I first estimated the switchboard equipment required to handle a unit.

Q. At what?

A. Pardon me?

Q. At what figure?

A. Well, this is the amount, the fraction of a position required to handle a unit, and then applied the annual charges per switchboard position to the units or to the fraction of a position required and that gave .1447 cents as the switchboard expense per unit.

Q. That is you took the cost of the switchboard; what did you do? Did you take the total cost of toll switchboard over the state and determine its value and apply annual charges to take care of maintenance and depreciation?

A. Practically that, Mr. McConnaughey. I got from our [fol. 9659] chief engineer's office the annual charges per toll switchboard position for the company. That figure I think includes the interest on investment, depreciation, taxes and insurance and any other items that make up that item.

Q. What is that figure?

A. That figure is $983.02.

Q. Per switchboard position used in toll operation in the State of Ohio?

A. That is right.

Q. Then you determined the proportion of a switchboard position that was involved in this average call?

A. That is right.

Q. What is that?

A. This is going to be—this is on an annual basis not- and it is going to be a long decimal; .0000014715719. It is necessary to carry that out to that extent because a small error will result in a very large error in the answer.

Q. That is the cost per long distance call in switchboard expense over the whole system in Ohio?

A. This figure I just gave you?

Q. Yes.

A. No. That is the fraction of a switchboard unit required. Now that was multiplied by $983.02, which product gave .1447 cents as the switchboard cost per unit. I think I detailed in my cross-examination at the previous hearing the method used in getting the operating expense. I think I gave you all of those figures.

To give you a little more detail, adding the .4464 cents, which is the operating cost per unit, to .1447 which is the switchboard cost per unit, gives .5911 cents as the operating [fol. 9660] and switchboard cost per unit. That figure multiplied by 16.11 is 9.52 cents.

I might say in making that computation I dropped the fourth digit, making that .591 times 16.11, giving 9.52 cents as the operating and switchboard saving per single ticket call. That was multiplied by 5,519,900, gives $525,495.00 as the operating and switchbpard saving for the year 1923. Adding to that $44,711.00, which is the circuit saving for the year 1923, gave the total of $570,206.00.

Q. Now have you determined the other savings in that same manner?

A. Practically, yes, the same method, Mr. McConnaughey.

Q. Is that on all of that?

A. Yes, sir.

Q. Now the difference in these two methods, of the single ticket and the double ticket method, is the difference in the making of the two records, isn't it?

A. One of the savings is the elimination of the writing of the ticket at the distant office.

Q. And the time that is saved aside from the writing of

the ticket is made necessary in the two ticket system by the fact that you have to make provision to get the ticket written, isn't it, by advising the ticket operator at the distant point and getting her in on the call?

A. Yes, there are all the points that I mentioned in comparing the two methods that result in this saving; that is, elimination of the ticket and all of the work that is involved before the second ticket is written and all of the work involved after the second ticket is written.

[fol. 9661] Q. In getting into connection with the operator at the distant point?

A. I don't know that I just follow you, Mr. McConnaughey.

Q. The essential difference is that in one system you have only one ticket made, only one record of the call, and in the other system you have the two tickets; incidental to that is the saving in time in connecting with the ticket operator at the distant point and her making the record?

A. That in general is right, only there is a large amount of operating saving——

Q. Incident to that?

A. In addition to the elimination of the writing of that ticket.

Q. Well, there is——

A. It is true that the fact that we do not write the ticket at the distant point results in the saving necessary to write a ticket plus all the other savings that we make because we do not write the ticket.

Q. Yes.

A. That is right, yes.

Q. Tell us why they ever did write the two tickets?

A. Well, in the olden days the toll transmission was not as good as it is today. The A. T. & T. Company have made great strides along that line in recent years. And it was not practicable for the operator at the originating point to deal directly with the subscriber at the distant point; that is, the transmission was not good enough for the operator to get to the called subscriber at this distant point the details of the call; that is, who was calling, etc., and it was not [fol. 9662] good enough for the subscriber to get back to the operator at the originating point any message she may have had; that is, it was necessary for the outward operator to spend a long time dealing with the called subscriber to find out just what the status of the matter was. The transmission was not particularly good.

Q. What do you mean by the transmission; the operation of the apparatus?

A. No, I mean the volume of voice sent over the toll circuit. That is, the subscribers could not hear as well over these toll circuits years ago as they can today.

Q. They had to hear each other over the same circuit?

A. I am going to get to that. It was found that there was considerable circuit time lost in having the originating operator deal with the called station; therefore the method in use was this single ticket method.

Q. The double ticket method?

A. Rather the two ticket method, which provided that the operator at the distant office would deal with the called subscriber. Now it is true that the subscribers had to talk over this connection and the transmission to them was not as good as it is today; but as a rule the calling subscriber and the called subscriber had something in common, and they were able to understand one another better than was the operator and the subscriber. That is one reason.

Another point that has made it possible to extend the single ticket method is the improved toll office management. We have better control over the management of our offices than we did years ago. We have service observing equip- [fol. 9663] ment which provides a means for checking the writing of the ticket at the originating point where there is only one ticket written.

Q. Going back to the circuit proposition, tell me how the writing of the ticket helped the circuit situation any?

A. How it helped it any?

Q. Yes.

A. Well, the originating operator under the two ticket method, as I said, would ring the distant office and ask for the ticket operator and give this ticket operator the details of the call as she had recorded them at her end. Now there is no subscriber's loop in that connection and these operators deal with one another every day and they had a pretty good common understanding so that it was fairly easy for the originating operator to get to the distant operator the details of the call. Then the distant operator dealt directly with the called subscriber and that involved only the subscriber's loop in the local exchange so that they were able to get along very well on the hearing end of it.

Q. What did the writing of the ticket have to do with this connection? What was the second ticket written for?

A. The second ticket was written so that the distant operator would have a record of the call so that she could ring the called subscriber and tell them that Mr. Smith of Cleveland was calling Mr. Jones, and "Is Mr. Jones In?" and if not "When do you expect him?", and she would go back on frequent occasions to the called subscriber in order to complete the connection. If that second ticket had not [fol. 9664] been written there would have been no provision for the distant operator to deal with the called subscriber.

Q. Except her memory?

A. Except by memory, which would not have been at all safe, and it would have been necessary for the originating operator to deal with the called subscriber and there would have been more lost circuit time under that arrangement and more operating labor and more errors than with the two ticket method. However, the improvement in toll transmission, the development of service observing boards by the A. T. & T. Company and the improved toll office management made the operation of the single ticket method practicable and economical, and that is why it was adopted.

Q. Now these two tickets under the old system, did they both figure in the accounting for the toll calls? Were they both turned in to the auditor and checked up against each other?

A. I think they were Mr. McConnaughey.

Q. Now this system, this single ticket method, was that all developed and put into effect at one time as a distinct method or was it a gradual improvement in operating methods that involved several steps before it reached its present status?

A. It was gradual. As I stated in my direct testimony, my first personal knowledge of the single ticket method was seven or eight years ago when I was first assigned to toll traffic engineering, but it is my understanding that the method was introduced some years prior to that time and was extended as fast as toll transmission and improved operating management and service observing equipment [fol. 9665] made it advisable to extend the method until today we are handling every call that it is practicable to handle on the single ticket method.

Q. Well, now, in determining the amount of savings that have been made here, have you offset the additional ex-

pense of improved circuit and service observation and office methods against the time element that you have figured on?

A. Oh, toll transmission was not improved in order to introduce——

Q. That is not the question.

A. The single ticket method——

Q. Wait a minute. That is not the question. Have you figured on that additional expense in arriving at your savings?

A. There is no expense chargeable to that.

Q. Then you have not figured on any expense due to the improvement in your transmission?

A. No, because there is no expense charged in that for this reason. Transmission was not improved simply that we might introduce the single ticket method. It was improved in order to give the public a better toll service. Toll office management was not improved simply that we could introduce this method. It was improved in order that we could improve the service and make operation more economical. Service observing equipment was not developed and installed simply to introduce the single ticket method, but it was put in in order that we might have a knowledge of the grade of service we were giving the public. And the single ticket method is simply a by-product of all these other matters.

[fol. 9666] Q. That is, because you have made all of these improvements which have cost you money, it is possible to do this detail in a little more effective way?

A. No, these other improvements we have made have not cost us money. They have saved us money. That is, improved transmission has saved us money in toll line construction. Improved office management has saved us money under office expense. Service observing equipment has saved us money in operating expense because we know wherein we are weak and where we can make improvement. So all these things have in themselves resulted in savings. But I have not taken any of those savings into consideration. I have simply included in my savings the single ticket method economies.

Q. Do you mean to say the improvement in your transmission has been effected without expense; that it costs less to transmit messages more efficiently in the modern plant or modern system than it used to cost?

A. I do not believe there is any question about that because the use of repeaters, for instance, has decreased the size of the copper wire required, and repeaters will prove in by themselves. That is, it is a matter of economy regardless of transmission.

And thereupon a recess was had until 1:30 o'clock P. M. of same day, Tuesday, May 27th, 1924.

[fol. 9667] Tuesday Afternoon Session

May 27th, 1924.

And also W. T. ANTHONY, resuming the stand for further cross-examination, continued his testimony as follows:

Cross-examined by Mr. McConnaughey:

Q. Mr. Anthony, when your company took over the Ohio State Telephone Company you had some opportunity to observe the practices of that company in the different exchanges?

A. Yes.

Q. Did you find the single ticket method of toll operation used in any of the exchanges?

A. Yes, the single ticket operating method was used to some extent in the Ohio State system when we took it over and shortly after taking it over we extended it to the same extent that we had the method in effect in the Ohio Bell System.

Q. Where was it in use? Was it in general use or just in some particular places?

A. Well, I know it was in use to a limited extent in Cleveland and Toledo.

Q. Of course it was in use at the points with which Cleveland and Toledo connected?

A. Some of the points. I cannot give you the exact figures, Mr. McConnaughey. But I recall hearing Mr. Ide, who was then the general superintendent of traffic, and Mr. Eckley, who was general supervisor of toll traffic, discussing [fol. 9668] the matter particularly after we took over the operation of the Ohio State and at that time it was brought out that the method was used only in a limited way and it was decided at that time to extend it to the same point as the Ohio Bell had had it in use.

I might say in that connection that we have given that

method to most of our connecting companies. In fact, to all of them, and I think most of our connecting companies are now using the single ticket method.

Q. Had you observed it in use any place else outside of the Bell system prior to 1921 when the Bell took over the Ohio State?

A. No, I cannot say that I did, Mr. McConnaughey.

Q. Did you find any machine ringing on manual or automatic switchboards of the Ohio State Company when your company took it over?

A. Yes, we found some of the Ohio State boards equipped with a type of machine ringing circuits.

Q. Did any of the automatic exchanges have machine ringing without the audible tone? I am referring now to the Ohio State.

A. Well, let's see. The Youngstown automatic exchange had machine ringing and the audible ringing tone. Columbus did not. Dayton——

Q. Did not have the audible ringing tone?

A. Did not have machine ringing or the audible ringing tone. Dayton did not and Akron did not.

Q. How about Alliance?

A. I rather think Alliance did have it and I think also [fol. 9669] Washington Court House.

Q. Do you know about when the Automatic Electric Company adopted the machine ringing in its practices?

A. No, I do not, Mr. McConnaughey.

Q. Do you know when the machine ringing was adopted for B boards by the Central Union in Ohio?

A. Not exactly, but it is my recollection that machine ringing B board trunks were in operation when I started with the Central Union Company in 1913; when I was with the Central Group of which the Central Union was a part.

Q. It was in common use then?

A. It was in use; it has been extended.

Q. Extended a good bit?

A. Since that time.

Q. To what extent has machine ringing been adopted for A boards in the Ohio Bell System?

A. We have adopted machine ringing cord circuits in the A boards where additional investment for that equipment can be justified.

Q. Where has it been done?

A. We have machine ringing cord circuits at Akron, Find-

lay, Sandusky, Middletown; there may be other place-; I do not recall those.

Q. Now in an automatic exchange having machine ringing all of the calls have the benefit of that saving, have they not; not only those on the A board or on the B board as in the Bell system in the manual exchanges, but all of them?

A. I don't know just what you mean by saving there. In the automatic system if the office is not equipped for machine ringing the subscriber does his own ringing. There [fol. 9670] is no saving of course on the part of any operators.

Q. They have the benefit of machine ringing on all calls and not simply the B calls in an office that is not equipped for machine ringing on the A board?

A. If it is so provided.

Q. In an automatic exchange there is not the same necessity for the education of switchboard operators that there is in the manual exchange, is there?

A. There are no operators involved in the average machine ringing on automatic calls.

Q. What does it cost to train an operator?

A. I cannot give you a figure on that. It costs some money. I cannot give you any particular sum.

Q. When did you first know of prepay coin collectors being used?

A. Well, they were used—my first personal knowledge of prepay coin box service was in Chicago.

Q. When was that?

A. I do not recall the exact year, Mr. McConnaughey; it was a number of years ago.

Q. When you first went there in 1913?

A. I do not recall whether they had prepay coin box methods in use at that time or not.

Q. Are you familiar with the switchboard in use at Warren?

A. I have seen the board.

Q. At Portsmouth?

A. No.

Q. At Lima?

A. I have seen the Lima equipment.

Q. At Mansfield?

[fol. 9671] A. I have never seen the Mansfield equipment.

Q. At Defiance?

A. I have never seen that equipment.

Q. Are you familiar with the general type of those boards?

A. In a general way, yes.

Q. They are similar, are they not?

A. Well, the Warren board is not similar to the Lima board. I think the Lima Home and Mansfield boards are similar, although as I said I have never seen the Mansfield board.

Q. What is the type of the Lima and Mansfield boards?

A. The Lima board is what is known as auto-manual equipment, manufactured I think by the North Electric Company, and I understand the same type of equipment is installed at Mansfield. I am not positive about that though.

Q. What is the effect of the use of boards such as at Lima and at Mansfield on the number of operators which are required in connection with a full manual board?

A. I would think that the number of operators required should be less for the reason that the investment in equipment is much greater than in the full manual system.

Q. Why is the number of operators less?

A. Because it is a different system of handling calls.

Q. Particularly by automatic machinery, is that correct?

A. Yes, sir.

Q. You have had some consultation with A. T. & T. General Staff experts in reference to machine switching equip-
[fol. 9672] ment in connection with your work?

A. Yes, sir.

Q. Did you consult with them with reference to the changes that were made at Washington Court House when that equipment was taken over? There were some considerable changes made in the equipment there, were there not?

A. We added to the automatic equipment at Washington Court House and I am quite certain that we conferred with the A. T. & T. Company on that matter, because shortly after we merged with the Ohio State Mr. Farnum, local traffic engineer of the A. T. & T. Company, and four or five other A. T. & T. men came to Ohio to assist us in our merged plans and we reviewed practically every job with them and I am quite sure Washington Court House was included.

Q. You made a considerable expenditure there in improvements and additions, did you not?

A. I do not recall how much money we spent, Mr. McConnaughey. We enlarged the system to take care of a greater number of subscribers than the plant in service at

that time had capacity for. In other words we added sufficient equipment to take care of the Ohio Bell subscribers in Washington Court House in addition to the State subscribers that were in the system.

Q. Are you able to state whether or not the effect of your changes and improvements there was to reduce the expense of operation over what it had been over the Ohio State management?

A. Well, we had to increase the size——

Q. Just answer the question. Do you know whether you reduced the operating expense by the improvements that [fol. 9673] you made?

A. We added subscribers to the system; therefore we added plant; naturally we increased the yearly charges, plant charges. I do not recall how many lines were cut over from the Bell office but it was necessary for us to buy equipment for each one of those lines. Naturally our charges are higher than they were before we spent that money.

Q. Yes, the aggregate charge is higher, but was the charge per line higher, do you know?

A. No, I don't know as to that.

Q. You don't know; alright. What change did you make at Alliance?

A. We did about the same thing. We added sufficient equipment in the automatic plant to take care of the Bell subscribers.

Q. And with the same result?

A. Yes, naturally we would have a larger investment for the larger number of subscribers.

Q. Well, now, your company has been working according to fundamental plans developed according to the A. T. & T. System in various exchanges in Ohio for a good many years, hasn't it?

A. Yes, I think that is correct.

Q. And in most all of the large cities of Ohio, including Dayton, you took over the Ohio State properties in 1921. Now in taking over those Ohio State properties did they conform to the fundamental plan that you have been working to in respect to the location of wire centers, building locations, layout of outside plant and so on?

A. Do you mean by that were the wire centers of the Ohio [fol. 9674] State offices in accordance with our fundamental plans?

Q. No, I mean how did the acquisition of that property fit in with your fundamental plans?

A. Well, I cannot tell you that definitely, Mr. McConnaughey, for the reason that fundamental plan work is a function of the chief engineer. The traffic engineer furnishes traffic data and studies for the fundamental plan but the final plan is made by the chief engineer of the company.

Q. And you made no studies for fundamental plans which contemplated the acquisition of such large units or amounts of property as were involved in taking over these Ohio State plants, did you?

A. Yes, for several years prior to the consolidation of the two properties our ultimate estimates, forecasts—I mean by that the station forecasts for the 15 or 20 year periods, were set up on the basis that there would be one operating company in order that the fundamental plan might be so set up at a consolidation so that the plan itself would be adaptable to the conditions on a consolidated basis; that is we for a number of years set up our traffic estimates on that basis, and just how the chief engineer applied that I cannot tell you in detail.

Q. That is, as far as your traffic estimates were concerned you figured that the Ohio Bell would be doing all of the telephone business in these various towns and engineered them in that way from a traffic standpoint?

A. Well, let me explain this, Mr. McConnaughey. The first move in connection with a fundamental plan is a [fol. 9675] commercial survey for a 15 or 20 year period. Now that is based to a large extent on the estimated population at that time. That work is done by the commercial department, and in their ultimate surveys they set up their station forecasts on the basis of one operating company. The traffic engineer is furnished a copy of the commercial forecast by classes of service and he prepares his ultimate traffic estimates on the basis of that forecast which, as I say, was set up on the basis of one operating company.

Q. Has that always been the practice of your company, so far as you know?

A. I rather think it has because it would be quite advisable in starting new projects to have some idea as to what effect a consolidation would have on that project.

Q. You rather think so; what is your information about it?

A. Pardon me?

Q. You stated that you rather thought that that was the case.

A. Well, you asked me if it had always been.

Q. I asked you if you knew whether or not it had always been?

A. I said in answer to your previous question that I know that was the case and has been the case for several years. Now I cannot go back more than 13 years but I would assume prior to that time the same thing was done because it would be quite necessary to have such information.

Q. In figuring the amount and type of equipment for a city under those conditions, that is where you were figuring on a city for 15 or 20 years in advance, and your company [fol. 9676] did not control all of the telephone business in that city, how would you figure the amount and type of equipment?

A. Well, in any fundamental plan the chief engineer sets up several possible conditions; that is, he may, in a city like Columbus, set up as Case No. 1 an ultimate plan having, say, ten central offices located at certain designated points. Plan No. 2, there may be eight central offices. One or two of the areas may be larger than in Plan No. 1, and so on. Usually in a large city there are eight or ten different plans set up. The commercial survey is made by small block areas. And the chief engineer takes that survey and adds up for a given area the lines and stations shown by the various block areas. That gives the number of stations in each possible office area under the eight or ten plans. Now that information is furnished the traffic engineer and we then prepare estimates, equipment estimates, covering various types of equipment, such as automatic and manual, together with the estimated operating cost.

The engineer then takes that data and rounds it up and decides which type of equipment is the most economical and also which of the several plans will be most economical for the future; or it may develop that the final plan will be a combination of two or more of the eight or ten plans suggested.

Now just what allowance the chief engineer makes for the type of equipment that is in service in the independent systems I cannot tell you definitely. Of course a funda- [fol. 9677] mental plan is an indication of the condition that should exist at the end of the 20 year period, say, and then

it is a question of working from your existing plant to that condition in the most economical manner.

Q. Have any of the fundamental plans with which you have had to do taken into consideration the possibility that the Ohio Bell Company would take over the property of an independent company in any community?

A. Yes, all of the fundamental plans that I have worked on since I have been in the telephone business were set up on the basis that in the ultimate period there would be one operating company.

Q. And that would be your company?

A. I don't know whether it would be our company or not, but it showed the requirements on the basis of only one operating organization.

Q. Did you in any of these plans take into consideration the possibility that your company would take over the system of the independent plant and join it to yours?

A. In the fundamental plan studies?

Q. Yes.

A. Now that is a feature of the fundamental plan that the chief engineer would handle with the equipment requirements under the various plans set up.

Q. Now wait a minute. You know of some of these plans. In fact, you know how practically all of the fundamental plans that you have had to do with were finally worked out, don't you?

A. No, not in detail, Mr. McConnaughey, because a fundamental plan is primarily for the outside plant and for the chief engineer's organization. From a traffic standpoint [fol. 9678] we are interested first in giving good service and second in having an economical plant. Now the economies of the plans considered must be decided by the chief engineer because traffic is only one phase of it.

Q. Well, now, I think you can answer this question by yes or no. Do you know of any plan that has been made that has contemplated that the Ohio Bell Company would acquire the property of the Ohio State Company in Ohio now and would join it onto the existing Ohio Bell plant as a part of that plant?

A. Yes, sir.

Q. Where was that done?

A. All of them.

Q. When?

A. All of the plans we have ever made assumed that a

combination of that kind was a possibility for the ultimate.

Q. And you laid out your plans accordingly?

A. Well, I presume the chief engineer, after getting that information—it costs a lot of money to get that information—I presume he most certainly used it in connection with his construction.

Q. Now are we to understand from that answer that according to the practice of the company the plan upon which the plant in Dayton was developed by the Ohio Bell Company contemplated that eventually the Ohio State Company would become a part of that system and be joined onto it and that the exchanges and the wire centers and the layout of the outside plant was designed with that in view?

A. Now that is a pretty long question.

(Question read.)

[fol. 9679] A. In the last *last* of that question when you refer to the location of wire centers, etc., do you have in mind the wire centers of the Ohio State property or the ultimate wire centers for the consolidated plant in Dayton?

Q. I have in mind the Ohio Bell properties as they were laid out.

A. The Dayton fundamental plan was set up on the basis that ultimately there would be one operating organization. As to the location of wire centers and other matters referred to in your question I can give you no detail on that because that is a function of the engineer's office and I am not familiar with it.

Q. That is, you are not able to answer that question?

A. Not in the detail you ask it, no.

Q. Can you answer it particular- with reference to the equipment?

A. That is the same thing; that is a function of the chief engineer's office.

Q. Now you have testified about the overlap ringing method of toll operation. Doesn't this method sometimes create some confusion between the two parties? That is, the distant operator on a toll call starts to ring the desired telephone at the same time the calling operator rings back the party who has originated the call; doesn't the latter sometimes find that no one answers the distant ring or that a wrong number has been rung or so much time elapsed before the proper party answers that the originator of the call feels that he has been called unnecessarily? Do you have any complications of that kind?

A. That is another of the long questions.

[fol. 9680] Q. I have tried to indicate all that I can think of of the complications?

A. I can answer it this way, Mr. McConnaughey. I think you have in mind the possibility of the calling subscriber being brought to his telephone before the called party is ready to talk?

Q. Yes.

A. That might be true under the overlap ringing method. However, it simply means that when he is brought to the telephone at that time he gets a report on the status of the call. He gets his report more quickly than he would under the old method. Under the old method he would still get that report but he would get it after the operator had received the report on the status of the called line. Then she would ring him back, that is, ring the calling subscriber back, and give him the report. Now with the overlap ringing method we fell right on that point particularly it is an improvement over the old method because he gets his report immediately. If the called party does not answer he is right there at the telephone and gets that report. He may decide, or he may have in mind another station in the distant point at which the party he desires can be reached, in which case the other station is rung and his call completed right there.

Q. Now you have spoken of this as a development. What was the process of development by which this practice was brought about, this method of operating?

A. Well, in the first place this method could never have been introduced if the single method had not been developed, because under the two ticket method of course you could not operate the overlap ringing method. The development is [fol. 9681] one that the A. T. & T. experimented on, as I understand it—in fact, Akron, Ohio, was one of the offices where the method was tried out prior to its final adoption. They made studies of methods at various points to determine just what the saving would be and just what the public attitude on the method would be, and it was necessary to develop new operating instructions to make the method effective.

Q. Now you have figured a separate saving on account of this overlap ringing; don't you overlap your savings there? Isn't this really a part of the saving that you effected by the single ticket method?

A. No, no.

Q. How do you distinguish between the saving of time between the one and in the other?

A. The point there, Mr. McConnaughey, is this, that the single ticket method was first introduced and we realized certain savings with that method as against the two ticket method that was in effect. Now I have given the savings on that, which was approximately $570,000.00. Now in addition to that saving the overlap ringing method made a further reduction in the cost of handling calls on the single ticket method. That is the single ticket method was a substitution for the two ticket method. Now the overlap ringing method is a modification or an improvement in the single ticket method.

Q. And a further development of it?

A. Yes, sir, a further development, that is right.

Q. Did you find in the Ohio State property any harmonic ringing on the party lines?

A. Yes, they had harmonic ringing on some of their party [fol. 9682] lines.

Q. What does that accomplish?

A. Well, in what way? It accomplishes the ringing of the subscriber's bell——

Q. A complete selection of an individual party on the line without any confusion with the other party, doesn't it?

A. I don't know just what you mean by confusion. It does provide a selection of the station on the line. There are other methods that do the same thing.

Q. That is, on a four-party line the party called is the only party whose bell rings?

A. That is true.

Q. Do you know how long that system of selective ringing had been in effect on the Ohio State system or any other independent systems?

A. No, I don't know how long it was in effect at independent offices.

Q. Has it been or is it in effect in any of the Ohio Bell properties before the Ohio State consolidation—before the consolidation with the Ohio State?

A. In Ohio?

Q. Yes.

A. I cannot think of a case in Ohio, but the system is one that was in effect in Bell offices. We have circulars covering the full harmonic ringing, A. T. & T. letters covering it. It is something that is available.

Q. What is the Ohio Bell practice on four-party lines? How does the Ohio Bell select a party who is called?

A. We have what is known as semi-selective ringing. If [fol. 9683] there were four parties on a line we have a selection between two of them.

Q. That is, two of the bells would ring with a different signal for each party?

A. That is right. When we ring one subscriber the other subscriber on the same side of the line also gets a ring; it is a different ring for each subscriber so that each one knows when he is being called.

Q. Yes, but each one gets a ring?

A. That is true.

Q. You have in the Ohio Bell some exchanges operating automatic equipment of the manufacture as is used in Columbus, do you not?

A. I do not know whether the Automatic Electric Company installed the Columbus equipment or not. It is very old. I rather think they did, and we do have in Ohio other equipment manufactured by the Automatic Electric Company.

Q. Where is it located?

A. We have equipment at Youngstown, Alliance, Washington Court House, Massillon.

Q. At Youngstown and Massillon you have put in new exchanges manufactured by that company, have you not?

A. Yes, sir.

Q. And you have made additions to the old installation at Alliance and at Washington Court House as you have stated here before?

A. Yes, sir, that is right.

Q. Your department had occasion to engineer these installations?

A. Yes, sir.

Q. You had to do with that, did you?

[fol. 9684] A. Yes, sir.

Q. And you decided upon the amount of equipment that was necessary for the number of lines and the volume of traffic that was to be taken care of there, did you?

A. Yes, sir.

Q. You had the assistance of the General Staff?

A. Yes, they assisted us in connection with those jobs.

Q. And The Western Electric Company?

A. I don't know whether The Western Electric Company was in on all of those jobs or not, Mr. McConnaughey.

Q. And The Automatic Electric Company?

A. Well, they furnished, they manufactured, the equipment.

Q. Was The Western Electric Company in on any of it? Did you consult with The Western Electric Company?

A. Personally I had no dealings with The Western Electric Company. The chief engineer's office deals with that company.

Q. Well, now, at Massillon what sort of a system did the Ohio State have?

A. They had a manual system.

Q. You changed to automatic?

A. Yes, sir.

Q. Of The Automatic Electric Company's manufacture?

A. Yes, sir, that is right.

Q. Who was it that actually decided to adopt the automatic system at Massillon?

A. The management of The Ohio Bell Company made that decision after a cost study had been made by the chief engineer of the company. The commercial department and the traffic department furnished data for that study. The chief engineer set up the final study and recommended to [fol. 9685] the management that an automatic system be installed at Massillon.

Q. Who made the cost study.

A. The chief engineer.

Q. Do you figure on costs in your particular part of the engineering work?

A. Yes, we make some of our own cost studies. That is, get the equipment and plant costs from the other departments and then of course making our own traffic cost study and we round them up. But a study of that kind is coordinated by the chief engineer.

Q. And you decide upon the amount of equipment to be installed?

A. Yes.

Q. Is that right?

A. Yes.

Q. Now, having completed the installation at Massillon, did you find the estimate you had made accurate and the quantity of equipment sufficient?

A. Yes, sir.

Q. It did not require any changes?

A. No, we have made no changes in the Massillon office since then.

Q. At Youngstown you found that two of the units were overloaded, as I understand it?

A. That is two of the connector boards. Each connector board involves not to exceed 100 subscribers.

Q. With eight connectors?

A. The average is eight. There are some boards having P. B. X. boards which have more than eight.

Q. How did you correct that overloaded condition?

A. We corrected that by transferring as a temporary proposition connectors—one connector from other boards. [fol. 9686] Eventually we will get disconnects in those boards. By that I mean subscribers located in those boards will give up their service. The load will drop down to an amount where eight connectors are adequate.

Q. You were able to take care of that overload by making nine instead of eight connectors for the time being?

A. Yes, sir.

Q. That was all that was necessary to be done to correct that overloaded condition?

A. As a temporary proposition but that would not be good practice for normal adjustment. To provide a satisfactory distribution of the traffic in an automatic system requires, as I stated this morning, a large amount of work. It is necessary to have peg count readings made on each one of these many groups at frequent intervals and to study all classes of service assigned to each of these boards, and so on. There is a large amount of work involved in maintaining the proper distribution of traffic in an automatic system.

Q. How does that compare with the work which is necessary to mainrain a proper distribution of traffic in a manual system?

A. It is a bigger job.

Q. A bigger job in the automatic system?

A. Than in a manual, yes.

Q. Why?

A. Because you are not concerned so far as your incoming traffic is concerned with the calling rate by various classes because you have in front of each appearance of every line in the office—we will say there are 8000 lines

in the board; that would be 80 groups of 100. We could [fol. 9687] have sime of those 100 groups with an incoming calling rate five times the average and it would not make any difference to us because every one of those groups appears in each section of the board and it is within access of every operator. However, in an automatic system you are absolutely limited to the number of connectors provided for each 100 incoming terminals and in the case of Youngstown that is eight.

Even a 20 per cent—even a load on one board 20 per cent greater than the average would have a serious effect on the traffic. So that in a manual system we are not concerned with the assignment of incoming numbers for traffic. We are concerned with the location of the lines in the answering jacks which corresponds to line switches in the automatic system. That is another problem in adjusting the load in the automatic system to get the originating lines properly distributed among the various line switching boards.

Q. You have explained that your department, the traffic department, is divided between construction and equipment on the one hand, and operating on the other. Just what work does the operating branch of the traffic department perform in the local exchanges which have automatic switchboards?

A. Now I don't think I stated that our traffic department was divided between equipment and construction.

Q. Equipment on the one hand; leave out the construction.

A. Between engineering and operating?

[fol. 9688] Q. Yes.

A. Those are the two broad divisions.

Q. Yes.

A. Now what is your question, Mr. McConnaughey?

Q. Now what function does the operating branch of the traffic department have to perform in automatic exchanges?

A. Of course in every automatic exchange we have a toll switchboard. We must also maintain an information board so as to give the public the numbers of new subscribers which are added from time to time.

We must also maintain a board for intercepting calls to numbers that have been disconnected or changed. In some automatic exchanges we also have AB toll operation in effect. So that under any automatic system you still have a

certain number of operators on your force, and our operating people of course must handle that end of it.

And our operating people are also interested in the service being rendered in the mechanical office or the automatic office, and they follow the results of automatic operation as shown in our service operations to which I referred this morning.

Q. That, however, is very much less than the same sort of observation in the manual office?

A. Well, I don't know that I would say that it is, Mr. McConnaughey. There is a large amount of work involved in analyzing machine switching service observations and then taking the necessary action to correct any difficulties that are brought out in these operations.

[fol. 9689] Q. More you think than comparable work in a manual exchange?

A. I don't know that I would want to venture an opinion as to the relative amount of work because I have never made a study of that point.

Q. Your company does a good deal of operating for the A. T. & T. Long Lines on toll messages, does it not?

A. Yes, we operate some traffic for the Long Lines.

Q. Is there any general rule which determines whether the A. T. & T. does its own operating or whether the Ohio Bell does the operating for it? How is that work done?

A. No, there is no rule on that. If the A. T. & T. Company has enough traffic to inter-city points to justify a separate operating organization they will set one up. Otherwise they will ask the Ohio Bell to handle it for them. And it helps the Ohio Bell because it makes a larger organization for us, that is, to have the combined traffic, especially in the smaller points, but there is no rule about it.

Q. How is it helpful to you to have a larger organization?

A. Because we get a larger operating organization.

Q. It is more flexible?

A. Yes, sir.

Q. Is that additional expense provided for by the A. T. & T.?

A. Well, there is no additional expense to us. It should save us money because, as I say, it gives us a larger organization.

Q. But it gives you additional work to do. It requires you to employ some that you would not otherwise employ,

[fol. 9690] or at least employ time that you would not otherwise employ?

A. Yes, but they pay us for it.

Q. They do pay you for it?

A. Yes.

Q. Well, that is what I thought you would say. Where in Ohio does the A. T. & T. maintain its own operating force?

A. In Cleveland and Toledo.

Q. Every place else it is operated by the Ohio Bell?

A. We have a switching station at Cambridge, one at Phoneton and one at Maumee, but that is just for the purpose of switching Long haul calls.

Mr. Dotson: Isn't there a switching station at Beaver Dam, Ohio?

The Witness: I think there is, Mr. Dotson. There was one. I don't know that it is still in existence. I rather imagine it is.

Q. Your toll lines are connected with a good many exchanges of independent companies, are they not?

A. Well, yes, sir, we make connections with connecting companies.

Q. And their operators do the operating for some of your messages just as you do for some of the A. T. & T.?

A. That is right.

Q. Do they do operating for A. T. & T. messages?

A. Yes, sir.

Q. You furnish these connecting companies information with reference to your practices for their benefit, as you have stated I think on page 990 of the record?

A. Yes, sir.

[fol. 9691] Q. And that is done with the approval of the A. T. & T. Company?

A. Well, I don't know that they approve it. I haven't heard of them objecting to it. I rather think they would approve it.

Q. For instance, if an independent company makes a request for this circular No. 1200, you furnish it to them?

A. Well, I don't know whether we furnish 1200 to any independent companies that request it or not. It is a question of whether they need it or not. There is a great deal of information in that circular that would not be at all applicable to a small exchange.

Q. How about 117?

A. I rather think they would get that. I cannot tell you just exactly how that is handled because those things would go through the office of the general superintendent of traffic or the division traffic superintendents. I have no direct dealing with connecting companies.

Q. If any of them would come to you for any advice or assistance about a traffic matter would you give it to them?

A. Certainly.

Q. And the commercial department would do the same thing, I assume?

A. I think that they would do so.

Q. Now why do you do this? Is there any benefit to the Ohio Bell that you get from improving the practices of the independent companies with which you connect?

A. Oh, I don't think that we would get any great benefits out of it, but the information is available and we are on good terms with the connecting companies and personally I [fol. 9692] would not refuse them any information that I had.

Q. Is it of any advantage to the Ohio Bell Company in its toll line business connections with the independent companies that it does connect with to have them following what you consider proper practices in conducting their business?

A. Yes, I would think that would be of advantage to the Ohio Bell Company where they connect with us.

Q. And your methods are of advantage to the A. T. & T. Company in connection with its toll line business in the same way, are they not?

A. What do you mean by the A. T. & T. Company now?

Q. The A. T. & T. Long Lines?

A. You mean the Long Lines operating organization?

Q. Yes.

A. Well, the Long Lines operating organization naturally like to know how we are handling things because we must have more or less of a uniform system at each end of the connection in order to avoid confusion.

Q. And it is to its advantage to have you following uniform methods with them and methods approved by the A. T. & T. organization, is it not, so that you will work harmoniously?

A. I would say that it is a mutual advantage.

Mr. McConnaughey: I think that is all we have.

[fol. 9693] Recross-examination.

By Mr. Dotson:

Q. Mr. Anthony, referring to the services of the observing board that you have been explaining, what date is collected by means of this board?

A. Do you have in mind the manual or machine switching?

Q. Well, you have it in both cases.

A. It is very similar; there isn't very much difference. We bring into the service observing board—I am talking now about the local service observing board—we bring into the service observing board a certain number of subscribers' lines. Those lines are changed each day, or every second day, depending upon the volume of traffic, and enough lines are brought in so that the operator or operators, in case we have more than one at the desk, are kept busy. When a signal comes in they cut in on the connection and follow the call, through to completion. For instance, they start their stopwatch when the signal appears because that is an indication that the subscriber has taken his receiver off the hook, and they have split-second hands on the watch and they get the interval required to answer the call, all of this in terms of seconds. They get a record of the trunk assigned, if it is a trunked call. They get a record of the exact second at which the A operator depresses the called circuit key, passes the order to the B operator; they get the exact second the B operator assigns a trunk, the exact second [fol. 9694] she puts the trunk up in the proper multiple jack; they get the exact second that the A operator takes up this trunk at her board and the exact second that the ringing starts on the called line, the time the called party answers, unless the connection is up over five minutes, in which case the service observer drops that call and goes to another. Otherwise she might be tied up for a half hour on one connection.

Now in case the A operator does not properly repeat the number to the subscriber the observer makes a record of that. In case the calling party calls a number and upon being connected with the number says it is the wrong number, a record is made of that. That indicates that he has given a wrong number or maybe had two numbers mixed or had transposed the digits or some error of that kind.

Also if a B operator assigns a busy trunk a record is

made of that. If the A operator takes up the improper trunks, that is recorded. If the subscriber during the course of the connection flashes his operator in, the observer starts her watch at the time the first flash comes in and then makes a record of the exact second that the A operator plugs or gets in on the connection to find what the subscriber has in mind. It gives us a record of every little detail involved in the completion of a call.

Q. In tying in subscribers' lines for the purpose of this observation you say that you tie in as many lines as will keep one operator busy all the time, and if you have more [fol. 9695] than one, then you tie in enough more to keep the second one busy. The object is to have enough lines tied in during the observation period to keep the operator set apart for that purpose busy?

A. That is right.

Q. Now how are these lines selected? Are they selected by classification of service or do you mingle a certain number of lines or apportion them among the different classes of service?

A. Yes, we do. In order to get a representative picture of the service we must observe on all classes of calls.

Q. What I mean is this: we start out today to observe a certain number of lines, the workings of a certain number of lines. Do you, in that instance, tie in a certain number of business phones and a certain number of residence phones? For instance, some business lines, some mercantile lines, some manufacturers lines and some other lines, so as to have practically all classes of service on that board represented?

A. Yes, sir.

Commissioner Poor: Are you trying to elicit the information whether they ever order in lines on the observation board, for any other purpose than the good of the business?

Mr. Dotson: I was coming to that. You may answer that question just as Commissioner Poor has propounded it.

The Witness: No, sir, we do not.

Q. How is that?

A. No, sir, we do not.

[fol. 9696] Commissioner Maullar: You do no detective business?

The Witness: As far as I know we do not. I am not in the operating end of the business, but I know there is noth-

ing put up on service-observing except for routine observations. Now we do have in our chief operator's desk what we call position monitoring jacks where we can monitor any position. That is for another purpose. That is for monitoring to see how well each operator is performing. I cannot answer your question definitely. I have never heard of a case myself.

Q. What is the real value which the company attaches to this information and what particular use is made of it?

A. Well, it is very valuable to us, Mr. Dotson, because it gives us a picture of the grade of service we are giving to the public. If we did not make observations of this kind we would go along month after month and would not have a real definite picture of the kind of service we are giving. We can get some picture of it from observations in the operating room but it is not as definite as this.

Q. Granting the picture and the completeness of that picture as you referred to it, I want to know now the real utility of it?

A. These service observations are taken by the field people, that is the division traffic superintendent and his assistants, and they also come into Cleveland to the general supervisor of traffic and they are analyzed. They are analyzed in order that the operating people can determine wherein the service is weak, if the observations indicate [fol. 9697] a weakness.

They might find, for instance, that in a certain exchange the service is very excellent except for, say, cut-offs. Now they immediately start investigation to see why the cut-offs may be running a little higher than normal. That may involve the plant department in maintenance. We will probably advise them that the condition exists and they then make a special check of that particular office. Or it may develop that some of our new operators are not taking down cords properly, which may result in cut-offs; in which case our operating people will make a special investigation of that matter.

Q. Will the observation show the cause of the cut-off, whether it is due to the operator's improper handling of the cord or whether it is due to some other cause?

A. Oh, no, it will not give that information; but other checks are made to determine the cause of the weaknesses we may find in the observation.

Q. Will the observation tell why certain lines are out of use, out of order?

A. Well, if a line is completely out of order, of course we will not get any calls on that line.

Q. Well, does the observation study assist you in the maintenance of the service where it is cut out in that fashion?

A. Oh, yes. For instance, cut-offs may be due to a line being out of order temporarily, and, as I said before, we refer to the plant department results of our observation and if they indicate that an investigation should be made, [fol. 9698] the plant department makes that investigation.

Q. Isn't it always necessary for the party whose line is out of order to first report it into the repair department before there is any account or record made of the condition of that phone?

A. No, there are many times when a line that is out of order will bring in what we call a permanent signal. The lamp will burn permanently and the plugging in of the cord will not retire the signal, in which case we know that the line is out of order. And we have special equipment at the head of the switchboard where those lines are plugged up. The operator locating this permanent signal will report it to what we call the trouble position. It is plugged up. She immediately makes a report to the repair clerk in the plant department.

Q. Now can any telephone line be tied in to this observation board?

A. Yes.

Commissioner Poor: Does the regular operator know what line is tied in to the observation board?

The Witness: No, sir, the lines are selected in this way, we have what we call a panel and jack record which shows the class of service assigned to each answering jack, but the number of the line is not associated with this record. This record is not kept primarily for assigning lines to the observing desk. It is kept in connection with the assignment of new lines to answering jacks. Now each day, or every second day, depending on how often the line is changed, a clerk goes through this panel and jack record and selects a certain number of one-party business lines, a certain num- [fol. 9699] ber of one party residence, P. B. X., etc. The operators have no indications that any lines in their panels

are being observed. The observing board is—I don't know of a case in Ohio where the observing board is located in the operating room. We usually place it where the operators coming in to work cannot see it and they do not know whether the board is covered or not. We sometimes cover the board in the morning and afternoon. At other times in the morning and evening, and then again afternoon and evening. So that so far as the operators are concerned the board may or may not be covered.

Q. About what percentage of the total traffic is sampled or observed?

A. I cannot give you that figure exactly, Mr. Dotson. I think something over seven per cent.

Q. Is this a daily observation?

A. Day and evening.

Q. Day and evening?

A. Yes, sir, we make sufficient observations on the evening so as to know whether our evening service is as good as service given during the business hours of the day.

Q. Is this handled then day and evening on what you call two tricks of eight hours each, something like that? Do you spend the full day, in other words, in the study or making of observations?

A. I cannot tell you just exactly how the tricks are assigned. This is a little out of my line, but I do know that the board is covered sometimes in the morning and afternoon, sometimes in the morning and evening, and sometimes in the afternoon and evening. Now, how the operating [fol. 9700] people adjust the tricks, I cannot answer that, Mr. Dotson.

Q. Do the operators who make the observation keep a careful tabulation of all the date you have referred to, of each call that goes through and is under observation?

A. Each call that they observe. Now, for instance, we may have 50 lines up and, say, two operators on the job. Now if a call comes in on the first service observing jack, one of the operators will pick that up. If a call comes in on another one, the second operator will pick that up. While they are following the progress of those calls, those two calls, maybe eight or ten more will come in that they do not get.

Q. They do not get them all; they just get those that they pick up?

A. Oh, yes. You could not begin to observe on every call.

Q. However, do they make a separate detailed report on each call that they do observe?

A. That is right. There is a form which has been designed for that purpose. It has—oh, I don't know—40 columns in it, I think, and across the top of this form there are certain items. For instance, the first one is Line Signal. That means the time the line signal comes in. Line Signal Answer. Under that heading will show the interval required to answer the signal. The next heading will show "Connection completed to multiple jack". Say it is a local call; it will show that interval. Another column will show the trunk assigned and the interval under that, and then [fol. 9701] "Trunk Taken by A operator", and the interval under that, and so on. That is a printed form.

Q. All of this data is tabulated as against each telephone number that is observed. In other words, when the subscriber calls, does that record carry the number of the phone that is calling?

A. No, it does not show the calling number.

Q. There is no way of individualizing it then or knowing who is using the phone or anything of the kind?

A. Oh, if we wanted to we could trace that back.

Q. I mean after what you do do?

A. Pardon me?

Q. I mean after the actual record you keep?

A. As I understand it, you ask if we trace that back to the calling station. Maybe I don't understand just what you are getting at.

Q. Let us get at it this way. Do you ever take an individual line, for instance my line in Toledo; for some reason you want to observe my line from my residence, put that under observation. Would you have a record of my line as such, so that anybody following out that record would know it was my line that was under observation?

A. No, we do not put the calling number on this record.

Q. That is what I am after. There is nothing in the record to individualize that phone call and know whose phone it was under observation?

A. Not in that record, no, sir.

Q. What then in this record is there that shows the character of the service which that phone is rendering?

[fol. 9702] A. Well, Mr. Dotson, let me say this first, that this record, this service observing, is not primarily for the purpose of correcting specific causes of trouble. It is for

the purpose of furnishing information as to the grade of service we are giving. Then in analyzing the details of these observations, as I said before, we find that we are weak on a certain point. Outside of these cutoffs the service is running fine. Now if we can just get on top of the cutoffs—cure them, then we will be in fine shape.

Q. Well, the cutoffs would take place naturally in one of the exchanges, wouldn't they?

A. Yes, sir. Then as I say we start our operating people; they know what may cause cutoffs. As I said before, there are certain maintenance troubles, new operators not taking the cords down carefully, etc. They start the campaign on those things, first investigating to see whether it is due to maintenance trouble, whether it is due to operating, and then they take the necessary measures to remedy the difficulty.

Q. Well, just one question further. Do you through this observation board service undertake to observe the defects on any calls that may obtain in any individual line at the request of the user of that line?

A. Not at this board, but we do have facilities right in the central office at the Chief operator's desk where we can observe on any line in the office, just one line at a time, and make a special investigation of the service on that line if [fol. 9703] that is necessary, but that is a separate matter.

Q. How do you calculate the percentages that you work out from the result of your observations?

A. I am not familiar with all the details of that Mr. Dotson. My only function in connection with service observing work is to provide the equipment and I have never had any experience in the summarizing of these observations. That is strictly an operating matter.

Q. With reference to traffic rating, what is that understood to be—traffic rating?

A. Well, that is, as I say, an operating matter and I do not think I can give you the information you want on that, Mr. Dotson.

Q. Do you know what your custom or practice is in the matter in which traffic rating is used, as to whether it is posted up in your office in the way of rating bulletins so that the operators will know the ratings of the various exchanges going to make up the exchange area in multiple offices?

A. I have seen data on service posted on the bulletin boards in the various offices, which records are accessible to the operators.

Q. Do you know what information these bulletins carry?

A. No, I cannot say offhand. As far as I know there is no uniform set-up for that. I think that the field people decide themselves pretty much how they want to show that information.

Q. Is this posted under the heading of traffic rating so that they know exactly what it relates to?

A. It might be. I have also seen figures on the per cent [fol. 9704] of wrong numbers and the per cent of irregularities, etc., posted.

Q. Now you have spoken about provisional objectives. What is a provisional objective?

A. I have not mentioned provisional objectives.

Q. Do you know what it is?

A. Why, that is also strictly an operating point. It has to do with the load to be carried in various offices depending upon the efficiency of the force and so on.

Q. Isn't it true that a provisional objective is what the traffic rating ought to be in any exchange?

A. When you said provisional objective I had in mind what is known as objective load. That is, in setting up our budget each month the operating people assume what the load will be, should be, depending upon the conditions in the office, and then strive to meet that. I do not just get your reference to that term, Mr. Dotson.

Q. Doesn't the company, Mr. Anthony, have a percentage or ratio that goes to make up the measure of traffic efficiency in each exchange?

A. Well, there is this sort of a thing in effect, Mr. Dotson. The company maintains records showing the comparative results obtained in various exchanges in the company, comparing Cleveland, Columbus, Dayton, and so on.

Q. This is tabulated and the record shows the percentage of traffic which each exchange handles, showing the degree of efficiency with which the traffic is handled?

A. I don't know just what you mean by efficiency. We [fol. 9705] also make comparisons of the loads carried in various offices, those loads being expressed in terms of units, which is a common factor and applies to all exchanges.

Q. Now these units, what do they represent?

A. Well, they represent the average units carried per busy hour position and the average units carried per employe hour.

Q. Now the record that I refer to takes into consideration the number of operators which you employ to handle the

traffic or the business and it shows the amount of traffic that number of operators is handling. Doesn't that study show not only the amount of traffic they are handling, but also shows the degree or percentage of traffic which they are handling in proportion to the amount of traffic they are rated to handle? Do you understand what I mean? If not I will put it this way. You have a given number of operators; those operators are serving in a certain exchange. Now isn't it true that these operators are supposed to handle a certain amount of traffic during a given period? That is true, isn't it?

A. In a way, yes. We make an estimate of the average load that can be carried per operator based upon the conditions obtaining in that exchange, the experience of the force, etc., and then from our monthly peg counts we determine just what the load was; in other words, get the actual load per operator, and comparisons are made between those two figures; that is, the estimated load and the actual load. In other words we try to keep a line on the efficiency of operators. If a given office is not carrying loads as high as it is estimated they could carry our field [fol. 9706] people immediately start an investigation to see why they are not able to carry those loads.

Q. That is ascertained by fixing what may be termed the maximum load which should be carried, which we will say, for convenience, is 100 per cent. Now your study and observation of the actual work done we will say shows they have only taken care of about 70 per cent of the amount that they are rated to handle. Now that determines the efficiency of the service, does it not?

A. It is not set up in just that way, Mr. Dotson. Let me give you an example.

Q. Very well.

A. The conditions in a certain exchange may be such that it is estimated that the units per employe hour that should be carried are, say, 135. Now each month we make our regular peg count and obtain actual data as to the load carried. Now that load actually carried may be 133 or 137. There are several factors that may influence the load carried. For instance, in setting up the estimated load it is necessary to forecast the amount of traffic we will have at this future period. Now naturally we are not going to hit that 100 per cent right.

Q. That also determines the number of operators you have?

A. Yes, sir, and we provide our operators on a basis of that estimated traffic. If the traffic is, say, two per cent lower than we estimated, naturally the load per operator is somewhat lower than estimated.

Q. I want to make myself clear. The point I want to get at, Mr. Anthony, if you are in position to answer, is [fol. 9707] the character of the service which is being rendered, how well it is being rendered by the operating force. That takes into account lost calls and delays of different kinds that enter into handling the service which in the end constitutes the efficiency of the service. Now how do you arrive at that? Don't you arrive at that result in order to know how well the service is being handled?

A. Yes; the service observations that we were discussing a short time ago are summarized for each office and then comparisons are made of the service rendered to the subscribers in various exchanges.

By the way, the service observations indicate the grade of service the public is getting, whether or not the company or the public is responsible. That if, is a subscriber gives a wrong number himself, that enters into the service calculations the same as if the operator connected to a number other than the one called.

[fol. 9708] Q. That study shows then how well the operating force meets the traffic condition, does it not?

A. Well, it shows the grade of service the public is getting. For instance, for a given period the operating may be perfect, 100 per cent perfect, and yet the subscribers may not be using their directories, they may be calling wrong numbers, in which case the service to the public is not perfect, and that is reflected in the service observations.

Q. But your service observations of course show whether the troubles mentioned by you are due to the faulty use on the part of the calling subscriber or whether it is due to the faulty operation on the part of the operating force?

A. That is true. But in summarizing the results the total is taken into consideration. However, in applying the data for corrective purposes, we take into consideration the details of the call, whether it is the subscriber or the operator who is responsible for the error.

Q. This information is what we call then the traffic rating is it not?

A. Yes, it is sometimes called the traffic rating.

Q. Do you know what the provisional objective is for such an exchange as Cincinnati and Cleveland?

A. Well, I don't know just what you mean by provisional objective, Mr. Dotson. The last time you asked me that question I mentioned estimated loads. If you are talking about service, the objective is perfect service, of course.

Q. I think we understand one another, although I may not express it just as you would. It is the percentage of [fol. 9709] efficiency of the service as it is handled by your operators, your operating force, if that makes it clear to you. You have spoken about a traffic coefficient. What is the coefficient for a flat rate A board say with 1-D or ten relay equipment?

A. The coefficient for a flat rate call, completed direct in the subscribers multiple of a 1-D board is 1.

Q. Is 1, yes. What is the coefficient for a 9-C or 9-D?

A. The same kind of call I think the coefficient is 1.3.

Q. What is the coefficient for 1-C equipment?

A. For the same kind of a call the coefficient of a 1-C board is .87.

Q. Why should it be so much lower, that is this 1-C equipment, than 9-C or 9-D equipment?

A. Well, you have got a different type of switchboard. The number 1-C switchboard is a much more expensive type of equipment. And has features that cut the operating work.

Q. What features do you refer to?

A. Well, one for instance is the machine ringing A cord, or as it is sometimes called, automatic A-board ringing. That type of cord circuit is provided in the 1-C board at a greater expense than the cord circuit than the 1-D board, and to offset that additional investment in equipment we get a higher operating load.

Q. Which is your practice in ordinary use of these boards, that of the 1-C equipment or of the 9-C or 9-D?

A. Well, the No. 9-C board is limited to 800 lines I think.

[fol. 9710] Q. 800 and less?

A. Yes, I think that is right. Let me check that. Yes, the maximum number of lines that can be handled on a No. 9-C board is 800. The maximum number of lines that can be handled on a 1-D board is three thousand. On a 1-C board we can handle as many as 9,600 lines, so that the

size of the exchange determines the type of switchboards to be installed.

Q. What equipment do you use in Toledo, do you know?

A. Yes, in the Bell exchanges we have what we call the No. 1 type of type of switchboard.

Q. No. 1-C?

A. No, not 1-C, just number 1.

Q. Just No. 1?

A. No. 1 that is right.

Q. What is the traffic coefficient on that?

A. On a flat rate call completed direct in the subscribers multiple the coefficient is 1.

Q. Well, the equipment you have mentioned as being in use in the Toledo office, that is not as efficient as the 1-C equipment is it?

A. Yes.

Q. Doesn't the difference between the traffic coefficients indicate a difference in efficiency?

A. In considering efficiency, Mr. Dotson, we have got to consider in addition to the operating expense the investment in equipment. The No. 1-C equipment as I said before is much more expensive than the No. 1, although it does result in higher load. But in considering efficiency you have got to take both the investment element and the operating expense element into consideration.

Q. As a matter of fact, the 1-C equipment is more satis- [fol. 9711] factory to the subscriber than the other because of the rapidity with which you can handle the service is it not. You can handle the service much more rapidly over the 1-C than you can over the other?

A. Oh, I would not say that Mr. Dotson.

Q. Haven't you made a study of it so that you are able to say which gives the faster service?

A. Well, as I said yesterday the speed of answer does not depend upon the type of switchboard installed. It depends upon the number of operators you provide to handle the traffic.

Q. Isn't it a fact that figures of your own company show that the 1-C equipment is 13 per cent faster in service than the other?

A. No.

Q. It is not?

A. No, sir.

Q. You know that to be a fact?

A. Yes, because on a 1-C board we would provide a certain number of operators to give us a reasonable speed of service. Now on a No. 1 board we would provide a few more operators to give us the same reasonable speed of service, but would save money in plant investment.

Q. How does it come then Mr. Anthony, that you have given us a coefficient here of 1 in the one type of equipment and .87 in the other?

A. Well, those coefficients, Mr. Dotson, do *you* represent speed of service at all. Those coefficients represent the amount of work involved in completing this type of call I mentioned on each of the boards. Now the signals are answered just exactly on the No. 1 board as on the No. 1-C board, but after the signals are answered the operator has [fol. 9712] a little less work to do on the No. 1-C board than on the No. 1 board.

Q. In what respect?

A. In the 1-C board the ringing is automatic. On the No. 1 board the operator does her own ringing. That is the main difference between the two boards.

Q. Isn't it a fact, Mr. Anthony, that on the 1-C equipment the calling subscribers bell, or the called subscribers bell rings immediately or quicker on the 1-D equipment or the 1 equipment as you call it?

A. Well, to this extent, Mr. Dotson, that on the 1-C board when the operator plugs into the called line ringing starts. On the No. 1 board, or the No. 1-D board, she plugs into the called line with one hand and at the same time reached for her key and starts ringing with the other. There may be a fraction of a second difference there. I couldn't say what it is.

Q. Well, then in the 1-D board the promptness of ringing the called subscriber depends upon the promptness with which the operator does the ringing, whereas in the 1-C equipment the ringing is made direct and promptly upon the call being placed?

A. That is true, that the ringing is done by machines on a 1-C board, but on the number 1 boards our operators are trained to handle their cords and keys in a certain way, and as I say she puts a cord up with one hand and at the same time she is pressing her ringing key with the other. That is part of the routine.

Q. That is the method or manner in which the call is handled in the 1-D board, but on the 1-C board it is machine ringing?

A. That is right.

[fol. 9713] Q. It goes right through?

A. The difference is that one is machine ringing—the difference is that on the one board it depends on the ambidexterity of the operator.

Mr. Burr: And sometimes the button is pressed by the operator even before the cord is put up, so that the ringing is started the moment that the cord is put up?

The Witness: That is likely to happen. The two are——

Mr. Burr: Simultaneous.

The Witness: Yes.

Q. Do you know what the local calling rates are in Toledo?

A. I haven't the details of the calling rates with me, Mr. Dotson. They vary in different offices.

Q. So you don't know what they are in Toledo. Could you furnish them to us?

A. Yes.

Q. You can?

A. We have such information as a matter of record.

Q. Can you furnish us the calling rates for other cities as well?

A. What cities for instance?

Q. We will say Akron and Canton?

A. That information is available.

Q. Is it for all of the cities involved in this matter?

Mr. Burr: What materialty has this with reference to this license contract?

Mr. Dotson: This license contract takes on something more than just the license contract aspect. It has ramifications that are material in the local rate studies. We have [fol. 9714] the witness here and I assume that you would prefer to have it facilitated as much as possible. If we can get this information we would like to have it. Now certain cities are involved in this hearing directly, naming them, Akron, Canton, Cleveland, Columbus, Dayton, Massillon, Toledo, and Youngstown. We would like to have the calling rates in those various cities.

Mr. Burr: I question whether the gentlemen representing those various cities want that information in the record. We are perfectly willing to give it to you for Toledo, which is the city represented by you, but it seems to me we are unnecessarily encumbering the record.

Mr. Dotson: I am asking it in my own behalf for the Toledo study. We have the witness on the stand. I ask it because he is on the stand now. It will save the time to get it some other way.

Mr. Burr: We will reserve our exception.

Mr. Dotson: All right.

Q. Can you tell us the ultimate capacity of an A board, Mr. Anthony?

A. It depends upon local conditions, Mr. Dotson. Also the type of switchboard. We have A boards of various capacity and the capacity of a particular type of A board will vary according to local condition, such as——

Q. What are some of those conditions?

A. Now, by capacity, I presume you have in mind, line capacity.

Q. Yes.

A. Is that right?

Q. Yes.

A. Well, two of the factors that will control the line capacity of an A board are, first, the number of answering [fol. 9715] jacks per panel, and, secondly, the amount of outtrunk multiple required. The answering jacks per panel vary with the calling rate per line. The outtrunk multiple requirements vary with the amount of trunking.

Q. Can you give us a general estimate of the ultimate capacity of an A board then?

A. No, I cannot Mr. Dotson, because no two are alike. It depends entirely on local conditions.

Q. Do you know what the capacity is in Toledo?

A. You mean for the average office in Toledo?

Q. Well, take it in the old Ohio State exchange, the old sterling board there; you have the old sterling board I understand?

A. Yes. No, I cannot give you that information off hand. I don't recall how many answering jacks per panel there are in that board nor how much outtrunk multiple is provided.

Q. Mr. Anthony, you have in a former statement rela-

tive to the multiple lamp signals stated that it was only effective in exchanges up to three thousand stations. What is the effect of the multiple lamp signals on boards under three thousand capacity?

A. Well, I think I said that in general that type of board is provided in exchanges not exceeding three thousand lines. I think I said that.

Q. You limited it to three thousand capacity?

A. Yes.

Q. That is my recollection. What is the effect of the multiple lamp signals on boards under that or within that [fol. 9716] capacity.

A. In what way do you mean, Mr. Dotson?

Q. Well, what particular advantage is there in handling traffic on a board of that capacity?

A. Well, if you have in mind from a service standpoint, there is no advantage that I know of.

Q. Does it have a tendency to speed up the service at all?

A. No. That is the same proposition that we were discussing for the 1-C board. The speed of answer is entirely a matter of the provision of operators, that is, the number of operators.

Q. Does it have any effect on the number of operators required?

A. Yes, higher loads are carried on that type of board. But on the other hand your investment in plant is much higher than with the other type of switchboard.

And thereupon a recess was had until ten o'clock, Wednesday Morning, May 28th, 1924.

[fols. 9717-9940] **Oral Evidence in "Service Connection Charge Case", No. 1728**

[fol. 9941] HEARING OF FEBRUARY 2, 1922

Part 2

And also CHARLES P. COOPER, called on behalf of The Ohio Bell Telephone Company, being first duly sworn, testified as follows:

Examined by Mr. Burr:

Q. Your name is Charles P. Cooper?

A. Yes, sir.

Q. Where do you live?

A. Cleveland, Ohio.

Q. What connection, if any, have you with The Ohio Bell Telephone Company?

A. Vice president and general manager.

Q. How long have you been associated with that company or other Bell Companies?

A. For some 14 years.

Mr. Burr: May I say to the gentlemen here in the room that Mr. Cooper has been on the stand several times before this Commission and in each case has qualified and has given his experience and I think you may assume from the fact that he is vice president and general manager of The Ohio Bell Telephone Company that he is undoubtedly qualified to speak with authority on the subjects that he will discuss. If you gentlemen concur with me in that view I will not seek to qualify Mr. Cooper any further but will stop with his qualification.

Voices: That is sufficient.

Q. Mr. Cooper, in connection with the service connection charges, have you prepared a chart and a routine showing the various steps incident to each operation involved in installation, re-installation, re-connection, disconnection [fol. 9942] and removals?

A. Yes, we have prepared a chart showing the principal operations in connection with a new connection and with a disconnection and supplements those charts with notes covering the principal operations that are performed in the different departments in establishing and dis-establishing service. There are many minor operations and items of work necessary; associated records that are not referred to on these charts.

Q. Look at the chart which, with the attached 19 pages may be marked Cooper Exhibit No. 1, and tell the Commission whether that is the chart to which you refer?

A. Yes, sir, it is.

Q. And the pages of descriptive matter attached to the chart, if I correctly understand you, outline some of the movements and operations necessary and incident to installations and the other methods which we have under consideration today?

A. Yes, sir, they do; and the chart in addition to explaining some of the principal operations indicates, for each copy

of the order that is prepared, the path that that copy follows from the time the original order is written until it is completed and that copy filed.

Mr. Burr: We offer Cooper Exhibit No. 1 in evidence.

And thereupon the document last above referred to is admitted in evidence on behalf of The Ohio Bell Telephone Company and is herewith submitted and marked Cooper Exhibit No. 1.

[fol. 9943] Q. Have you given some consideration to the nature and extent of the various lengths of life of telephone stations?

A. Yes, sir, we have given considerable consideration, to that *that* have conducted extensive studies. In particular we have made an analysis of stations discontinued for a six months' period from December 1st, 1920, to May 31st, 1921, in four of our exchanges, one in each of the second, third, fourth and fifth classes proposed and from that analysis have prepared a table showing the nature of the variation in life and the extent of that variation based on those analyses.

Q. Look at the chart which may be marked for purposes of identification as Cooper Exhibit No. 2 and tell the Commission whether or not that shows the average life of stations and the percentage of total stations terminated?

A. Yes, sir, it does.

Q. I wish you would explain to the Commission, if you please, the working of that chart, not going through all of the figures, but illustrating by one set of figures so that the Commission and the other gentlemen here may understand just how the chart works.

A. In Column A is shown the names of the four exchanges, namely, Cleveland, Columbus, Canton and Nelsonville.

Q. What are those exchanges and why did you choose them?

A. Cleveland is in class 5, Columbus in class 4, Canton in class 3 and Nelsonville in class 2. We selected one in each of the four classes for this analysis to determine the nature and extent of the life of stations discontinued during this period and to see what, if any, similarity there is between [fol. 9944] these different exchanges, even though they vary in size and in development.

Q. Did you make your choice of those four cities with reference to their being typical or for any other reason?

A. Because we thought they would be typical of the conditions that would apply and be found throughout the territory.

Q. Now where did you obtain the figures shown in your column marked "Average life in months"?

A. Each station terminated during the six months' period had a certain life in months up to the time of termination. All of those ages were tabulated and then divided for each of these classifications by the number of stations involved to get the life in months. That average life, in the case of business main stations in Cleveland, as shown in Column B, line 1, is 26.3 months; for Columbus business main stations shown on line 9, column B, 26.6 months.

Q. Now then you took, in line 1, all the way across the Exhibit, a total number of stations for each exchange, and I will ask you first to tell the Commission where you secured that total.

A. The last total to the right on the statement for example in column W is business main stations, Cleveland, shown on line 1, is 2881. That is the total number of business main stations terminated during that six months' period in Cleveland. The analysis of all of the details shows that 2,133——

Q. That is coming back to the third column?

A. Coming back to Column C; 2,133 of those stations or [fol. 9945] 73.03 per cent of the total had a life of 26.3 months or less. In other words, 2,133 stations did not live in excess of the average life of the total of 2,881. Then as we go across the form in columns D, E, F, and so forth, we have entered, under each of the headings shown, the number of months specified, and the number of stations terminated up to that period. For example, in column I under the six months' period we have 614. That means that 614 out of that total of 2,881 were terminated within six months or less, and so on across the form until we get the total in each class.

Q. Now does the same computation and the same process and method apply to all of the other classes of service and to each of the other exchanges shown in the Exhibit?

A. It does.

Mr. Burr: Is there anything about the Exhibit that any

of the gentlemen here do not understand that they would like to have me ask further of the witness?

Mr. Shuler: I would like to have the number of years specified there. I haven't got that through my head.

The Witness: We have carried that out by months up to and including 12 months, and then in order to condense it and get it into a statement of this size we have taken two years, three years, four years, and so forth, up to 20 years and in the last column over 20 years.

Mr. Shuler: That is 100 per cent changed in 20 years; 99.97 per cent changed in—or 98.96 changed in 15 years?

The Witness: 15 years or less. Now, if you want to get the number of stations that had a life in excess of 15 years [fol. 9946] you deduct the 2,851 from the 2,881 which would be 30 stations. 30 of those stations have been in service for 15 years or more, or for over 15 years.

Mr. Shuler: And it means—the number of years service means the number who had it less than the number of years at the head of the column?

The Witness: Put it this way; had a life not exceeding the number of years specified.

Mr. Shuler: All right; I have it.

Mr. Burr: We now offer Cooper Exhibit No. 2 in evidence.

And thereupon the table last above referred to is admitted in evidence on behalf of The Ohio Bell Telephone Company and is herewith submitted and marked Cooper Exhibit No. 2.

Chairman Poor: Just a minute until I get this straight. In Column D, does that mean of the number 2,881 that were discontinued 74 of them have only operated for one month?

The Witness: One month or less; and similarly in the next column 174 including that 74 had been in service for 2 months or less. The figures are cumulative as they go across to the right of the form.

Mr. Dotson: To make it clear, I do not believe I understand the figures 2,133 in Column C; how do you arrive [fol. 9947] at that?

The Witness: 2,133 of these stations had an average life of 26.3 months or less. 26.3 months is the average life. Now if you go across the form to between two and three years you will notice the number not exceeding two years in life was 2,057 and not exceeding 3 years was 2,305. This 2,133 is in between those two points.

Mr. Dotson. I see.

The Witness: And that column was put in just to show the number of stations not having a life in excess of the average of the total.

Mr. Dotson: All right; I have it now.

By Mr. Burr:

Q. Look at the chart which may be marked for identification as Cooper Exhibit No. 3 and tell the Commission what that is, if you please.

A. Exhibit No. 3 is based on the same information and same analysis as Exhibit No. 2 and states the same information in another form. In column 1 we have entered the period of the life expressing that as a percentage of the average life of the stations and then across the page; for example, in columns 2, 3, 4, and 5, for Cleveland we have shown the average of stations not exceeding that per cent of the total life for each of the four classes analyzed, namely, A, business main stations; B, residence main stations; C, business extensions and P. B. X. stations; D, the total of all stations.

Mr. Shuler: What is P. B. X. stations?

Mr. Burr: Private branch exchanges.

[fol. 9948] The Witness: This statement is prepared to show that there is a fairly uniform relation in the percentage of the stations terminated within any specific period of the total average life in the various size exchanges. For example, looking opposite 100 per cent in column 1, in column 2, the business main stations, Cleveland, 74.03.

Q. That is under A?

A. Yes, sir; and in Column 6, Columbus, A, 74.29. That shows that whereas there was a variation in the average life of from 26.3 in Cleveland for those stations to 26.6 moves in Columbus, that the percentage of the total stations for that period or less than that period was practically the same. A similar relation will be found to exist throughout the statement.

Mr. Burr: We offer Cooper Exhibit No. 3 in evidence.

The Witness: These statements both indicate and reflect very clearly the relatively short life of the stations terminated and that those stations had a very high rate of turnover also.

Mr. Leach: May I ask in that column 1 of Exhibit 3 what the figures in column 1 represent?

The Witness: They represent the period of service, expressing that as a per cent of the total life. For example, Mr. Leach, immediately under 100 per cent we have entered the average life in months of the stations analyzed; in that case 74.03 is Cleveland. Column 2 is the same as the 74.03 that you will find on Exhibit No. 2 in column C.

[fol. 9949] Mr. Shuler: In other words, the average life is 26 months?

The Witness: 26.3 for those particular stations.

By Mr. Burr:

Q. What have you to say, Mr. Cooper, on the subject of the variation in life of active stations?

Mr. Dotson: Before you go to that I would like to ask another question.

Mr. Burr: All right.

Mr. Dotson: To what extent, Mr. Cooper, does the information disclosed in Cooper Exhibits Nos. 2, and 3 respectively, affect the question of charges that is before the Commission at this time?

The Witness: In this way, that it brings out very clearly the very high rate of turn-over of stations with a relatively short life. Now, the analysis that we go into now of active stations or stations in service on a given date, on the other hand, will indicate that there is a considerable number of stations that have a relatively long life.

Mr. Dotson: Well, in other words, then in cases where service is abandoned by subscribers that is taken into consideration in arriving at these figures?

The Witness: Where service is discontinued for any reason whatever——

Mr. Dotson: So that the life as shown here does not depend upon the wearing efficiency or life of the material or equipment?

The Witness: No; we are talking now about the life of the [fol. 9950] service rather than the equipment or plant.

Mr. Dotson: That is the point I wanted to get at.

Mr. Harshman: In making up these two Exhibits have you taken into consideration the phones which are disconnected for non-payment, or only those that are actually taken out?

The Witness: No, they are not included, unless, Mr. Harshman, they might be stations that were disconnected

for non-payment and then permanently left disconnected without service being restored; those would be included.

Mr. Burr: Now, please read my former question.

(And thereupon the pending question was read as follows:

"Q. What have you to say, Mr. Cooper, on the subject of the variation in life of active stations?")

A. An analysis and study has been made of active stations that is stations in service on a given date covering 10 per cent of the stations in these same four exchanges as of June 30th, 1921.

Q. Look at the chart marked Cooper Exhibit No. 4 and tell the Commission whether that is the one you refer to in your last answer.

A. Yes, sir; that chart has been prepared from that analysis and shows the average life of those stations and a number for varying periods of life arranged in a manner similar to that of stations discontinued as shown on Exhibits 2 and 3.

Mr. Burr: We offer Cooper Exhibit No. 4 in evidence.

[fol. 9951] And thereupon the chart last above referred to is admitted in evidence on behalf of The Ohio Bell Telephone Company and is herewith submitted and marked Cooper Exhibit No. 4.

The Witness: This brings out clearly that the average life of stations still in service on June 30th was considerably in excess of the life of stations terminated during the six months' period that was analyzed. For example, the business main stations in Cleveland as shown in line 1, Column B, had an average life of 45.4 months, and those stations are still in service or they were in service or they were in service at that date. These totals under the various periods of months specified in years total across the page cumulative in the same manner as on Exhibit No. 2, showing for example under "Business main stations, Cleveland 2,617, total of a life not exceeding over 20 years; 2,604 as shown in column W with a life not exceeding 20 years.

Mr. Dotson: How did you select your 10 per cent. of the subscribers from which this record is made?

The Witness: We took the line numbers at random. For example, in one exchange we start with line 1, 11, 21, 31,

41 and so forth, all the way through. In another exchange we may have taken 2, 12, 22, and so forth. But the selection was made in that manner.

Mr. Dotson: And by stations you mean the various individual telephone installations?

The Witness: Yes, sir. Now from this study it is quite [fol. 9952] clear that we have a considerable number of stations that had a relatively long life. For example for the Cleveland residence main stations it appears that 50 per cent. of those stations have been in service for two years or more; 39 per cent. have been in use 3 years or more; 32 per cent. have been in use for 4 years or more and 25 per cent. for 5 years or more and 8 per cent. for 10 years or more.

Mr. Dotson: That is not shown in the chart or Exhibit submitted is it?

The Witness: Yes, sir, it appears here; for example, the residence main stations, Cleveland, as shown on line 3 under column P 50.3 per cent. had a life not exceeding 2 years.

Mr. Dotson: Oh, yes.

The Witness: That means that 50 per cent. then had a life of over 2 years, and so on across. Those percentage figures that I read can be obtained right from line—I beg your pardon, it is line 4.

Mr. Dotson: Yes, line 4, column P.

The Witness: Yes, sir; for 2 years, and for 5 years it would be column T and for 10 years it would be column U.

By Mr. Burr:

Q. Look at Cooper Exhibit No. 5 and tell the Commission what that is if you please.

A. Exhibit No. 5 is based on the same information as Exhibit No. 4; that is an analysis of 10 per cent. of the active stations in service on June 30th, 1921, and is arranged so as to show the percentage of stations of each class of a given life expressing that life as the percentage [fol. 9953] of the average life, and on this statement immediately under the line showing 100 per cent. we have also included the average life in months for the stations in each class. For example, in column 2, Cleveland business main stations, 45.4 months.

Mr. Burr: We offer Cooper Exhibit No. 5 in evidence.

And thereupon the chart last above referred to is admitted in evidence on behalf of The Ohio Bell Telephone Com-

pany and is herewith submitted and marked Cooper Exhibit No. 5.

Q. Mr. Cooper, calling your attention to your Exhibit No. 4 again, you were asked by one of the gentlemen in the room as to where you got your percentages, and I think you referred to the third line, columns P. r and S, and you spoke of 50 per cent. and 39 per cent. and 32 per cent. and so forth. Now those per cents. were obtained, were they not, by subtracting the per cents.—and I will not give them by hundredths—of 50 per cent., 61 per cent., 69 per cent., and so forth, from 100, were they not?

A. Yes, sir.

Q. I sould have some line 4 instead of line 3 for I think you corrected that did you not?

A. Yes, you corrected that.

Chairman Poor: Where did you get your Column P, and so forth, on Cooper Exhibit No. 4?

[fol. 9954] Mr. Burr: Oh, in this copy that the Chairman has it has not the alphabetical marks or numbers.

Chairman Poor: I understand what you mean by it.

Mr. Dotson: I think, Mr. Cooper, in your testimony in chief, in referring to the ten year period that you mentioned that it was under Column U; that that is under column 7 is it not, the percentages for the ten year period?

The Witness: Well, that percentage would be 100 minus the 92.29?

Mr. Dotson: Well for the ten year period it would be under column T instead of column U; I understood you to say Column U.

The Witness: The copy I have is marked "U". There must have been some error made in marking them.

Mr. Dotson: It is marked "T" here.

The Witness: Marked "T"?

Mr. Dotson: Yes.

Mr. Burr: Well, let us get that right.

The Witness: It is marked "U" on my copy.

Chairman Poor: They left out the "Q" on some of them.

The Witness: That is the trouble, yes, sir.

Mr. Burr: We will substitute a corrected copy for the record and will make a correction on those Exhibits that have been passed around among counsel.

By Mr. Burr:

Q. Mr. Cooper, have you summarized the average life in months for terminated and active stations in line with your Exhibits 2, 3, 4, and 5?

A. Yes, sir, those have been summarized and put together [fol. 9955] in statement form, the statement indicating the average length of life in months for all classes of stations as computed in accordance with the two months that I have just described; first "A", terminated stations from January 1st, 1921 to May 31st, 1921" and "B, 10 per cent. of the active stations as of June 30th, 1921."

Q. Is that information summarized in the writing marked Cooper Exhibit No. 6?

A. Yes, sir, it is.

Mr. Burr: We offer Cooper Exhibit No. 6 in evidence.

And thereupon the document last above referred to is admitted in evidence on behalf of The Ohio Bell Telephone Company and is herewith submitted and marked Cooper Exhibit No. 6.

The Witness: That summary indicates that there is a rapid turn-over of stations largely caused by the rate of turn-over or the rapidity of movement within the short term classes and emphasizes the necessity for the securing of reasonable protection against unwarranted service connection expense due to the short term of service users.

Q. What have you to say on the subject of the expense incurred on account of station movements?

A. The expense incurred on account of station movements is a substantial item of expense to The Ohio Bell Company and include those items of cost that go with establishing service and discontinuing service and moving of [fol. 9956] service as distinguished from the rendering of service to stations continued. New subscribers are being added to the system constantly from day to day; existing subscribers are being lost, having the service discontinued and other subscribers are moving from place to place. During the period from January 1st, 1917 to January 1st, 1922, in the territory formerly operated by The Central Union Company and The Cleveland Company it was necessary on the average to connect 5.38 telephones to secure a net gain of 1. The extent of that station movement and its

relation to growth is indicated in the statement that I have prepared for that 5 year period.

Mr. Burr: That statement may be marked for identification as Cooper Exhibit No. 7, and we offer it in evidence.

And thereupon the statement last above referred to is admitted in evidence on behalf of The Ohio Bell Telephone Company and is herewith submitted and marked Cooper Exhibit No. 7.

The Witness: During that period the total number of stations installed, re-installed and re-connected was 409,785. The total number of stations taken out, that is disconnected and removed was 340,847. The net gain was 76,185. The number of stations into the number of stations gained is 5.38, and that is divided into:

A. Stations put in for new subscribers, 3.71, and B. Outside moves of existing subscribers, 1.67.

[fol. 9957] Q. Have you prepared an Exhibit showing the extent of station movements and the relation to stations in service?

Mr. Dotson: Are you going into a new subject?

Mr. Burr: This is very similar.

The Witness: Yes, a statement has been prepared comparing the total volume of the Company's station movement, divided between stations put in and stations taken out for each of the classes of exchanges in the territory formerly operated by the Cleveland and Central Union Companies, which brings out the high rate of station turnover.

Q. Is the statement to which you refer the one which is marked as Cooper Exhibit No. 8?

A. Yes, sir, it is.

Mr. Burr: We offer Cooper Exhibit No. 8 in evidence.

And thereupon the statement last above referred to is admitted in evidence on behalf of The Ohio Bell Telephone Company and is herewith submitted and marked Cooper Exhibit No. 8.

The Witness: It will be noted from this statement that stations are being installed at a rate that will account for the equivalent of all stations in use in a period of approximately 3.75 years, and are being taken out at a rate that

will account for the equivalent of all stations in a period of 3.85 years.

Q. And the difference between those two figures represents your gain does it not?

A. That is right.

[fol. 9958] Q. I wish you would discuss for a moment the ascertained unit expenses for service connections.

A. The service connection expense can be divided into two general classes, first, the specific expense and, second, the indirect expense.

Q. Mr. Cooper, before you proceed with that I am going to ask you to identify, if you please, Exhibits 9, 10, 11 and 12 which contain a summary of the expenses which you are about to discuss for the four exchanges, namely, Cleveland, Columbus, Canton and Nelsonville, so that the gentlemen in the room may have them before them as you discuss the subject.

A. Exhibits 9, 10, 11 and 12 show these direct expenses for Cleveland, Columbus, Canton and Nelsonville respectively, based on the study and analysis that I will be glad to explain.

Mr. Burr: Cooper Exhibits 9, 10, 11 and 12 are offered in evidence.

And thereupon the statements last above referred to are admitted in evidence on behalf of The Ohio Bell Telephone Company and are herewith submitted and marked respectively Cooper Exhibits 9, 10, 11 and 12.

The Witness: The specific expense shown on these Exhibits are the non-capitalized items of expense in the different departments of the Company incident to the handling of an order from the time the original application [fol. 9959] for service is made until service is established, following through to the completion of the work occasioned by the discontinuance of the service but not including the expense of any of the items of regular service furnished to the subscriber while his station is connected and in use. These costs are based on detailed studies that have been made for each department of the Company in each of these four exchanges and cover the minimum specific expenses.

Certain other items should be added to those amounts to get the total expense but in this analysis we have eliminated

all other than the direct items of expense that we could pick out and ascertain accurately.

Exhibit No. 9 for Cleveland shows a total service connection cost under No. 1 for instruments not in place; main stations and P. B. X. trunks of $15.90. That includes the average amount of wiring loss per station discontinued and removed for Cleveland, which will be explained in the next statement.

For instruments in place that cost was $19.07.

Q. Why is the cost lower in the case of instruments not in place than instruments in place?

A. In the case of Cleveland it is just the other way, Mr. Burr; it is more for instruments in place than it is for instruments not in place, due to the fact that where instruments are not in place a part of the plant operation—plant work in the first case is chargeable to the capital account. But if the instrument is in place the work necessary to be done by the plant department in re-connecting the service [fol. 9960] is charged to the expense account.

Q. I see. I have already offered your Exhibits 9, 10, 11 and 12 inclusive in evidence, but before leaving that, Mr. Cooper, I would like to ask where is the data—or perhaps where are the data is more grammatical—showing the costs which you have tabulated in these four Exhibits.

A. I brought with me some of the summaries involved in the making of this study in these binders. There is some of the data. The fundamental data on which these costs are based is not included here.

Q. And those four inches of pages you hold in your left hand represent a part of the data from which those costs were compiled?

A. That is right.

Mr. Burr: And anybody may examine these sheets at their leisure.

Mr. Dotson: Mr. Cooper, why does the fact that the original installation cost, when it is charged to capital account, become less than the cost of installing the service where the instrument is in place when it is charged to expense account?

The Witness: These amounts shown on Exhibit No. 9 cover only the items that are not charged to capital account. Now in the case of a new installation a considerable part of the work done by the plant department is charged to the

capital account. For example the assignment of the line number, the cable conductor and the distribution of the equipment, the construction of the drop wire, the installation of the instrument and the running of the inside wire is all charged to the capital account. Now if the instru-
[fol. 9961] ment is in place, any work going with the re-installation or re-connection of that service must, under our uniform system of accounts, be charged to expense. And there is always some work of that kind to be done, in some cases more than others. But that work tends to increase the cost of the plant part of the operation as compared with the installation of a brand new service.

Mr. Dotson: Well, how does the cost where the instrument is in place compare with the amount that is charged to expense account in the original installation?

The Witness: I do not know that I understand you, Mr. Dotson.

(Question read.)

The Witness: It would be greater than in the original installation.

Mr. Dotson: It would?

The Witness: Yes, sir.

Mr. Dotson: Well, your statement does not show the item of expense that is charged to expense in the original installation does it?

The Witness: Yes, sir, it does.

Mr. Dotson: Where does that appear?

The Witness: In the case of Exhibit No. 9, instruments not in place, under Line 1, main stations and P. B. X. trunks would be a total of $5.19. Under "Establishing service" and under "Discontinuing service", $10.71. That total of $5.19 is made up——

Mr. Dotson: The total of $5.00 and $10.00 would consti-
[fol. 9962] tute the total expense of that station?

The Witness: Yes, for the original installation and for the subsequent discontinuance of service.

Mr. Dotson: Now, that expense is not as great then, however, as the amount you carry to the expense account when the instruments are in place?

The Witness: Yes, it would be greater than that amount on the average.

Mr. Dotson: I am using the figures here; the total of those two items would be $15.90, whereas in the case of in-

struments in place for main station and P. B. X. trunks would be $19.07. That is the figure I am using.

The Witness: Oh, I did not understand you. The cost is greater if the instruments are in place than if they are not in place, due to the fact that in re-installations and re-connections there is a certain amount of work necessary to be done in that case chargeable to expense, which in the original installation would be charged to capital.

Mr. Dotson: I see.

The Witness: These costs shown on these statements cover only those items of expense and do not include the cost charges.

Mr. Dotson: I understand.

By Mr. Burr:

Q. Mr. Cooper, we have been talking more or less about wiring loss. Will you explain to the Commission what that item is and in connection with your testimony I will ask you to identify Cooper Exhibit No. 13 which bears on that subject, so that it may be passed around prior to [fol. 9963] your testimony.

A. Exhibit No. 13 is a statement prepared to define wiring loss and to give the total amount of that loss for The Ohio Bell property for the five year period January 1917, to December 31st, 1921.

Mr. Burr: We offer in evidence Cooper Exhibit No. 13.

And thereupon the document last above referred to is admitted in evidence on behalf of The Ohio Bell Telephone Company and is herewith submitted and marked Cooper Exhibit No. 13.

The Witness: At the time a new installation is made, as has already been explained, the labor and material used by the plant department at the applicant's premises, are charged to a plant account, that is, are capitalized, and at the time are not expense. However, when the telephone is removed this item is credited to the plant account, so that capital at no time includes items for installation not actually in service. At the time of making this credit to capital, the salvaged part of the installation is charged to a material and supplies account, and the balance is charged to expense until such time as it is to be re-used. That part of the capitalized cost of a new installation, which cannot later

be salvaged, therefore, may be considered a deferred expense item. This expense or loss is represented largely by labor.

When telephones are re-installed, that is, when telephones [fol. 9964] are placed where old wiring is in place and usable, the value of the wiring in place, including the original labor involved, is credited to expense and charged to the proper plant account. The result is a constant succession of debits and credits to expense from this source, and the net balance during any given period, is the amount of realized expense out of the original total capitalized costs above referred to as deferred items of expense. The net amount of this expense divided by the number of removals during the period gives the average wiring loss per station removed, and is a separable item of expense clearly attributable to station movement.

Then follows a table showing the wiring loss for the territory of The Ohio Bell Telephone Company as operated by the former Cleveland Telephone Company and the Ohio Division of The Central Union Telephone Company.

Q. Suppose, Mr. Cooper, that you eliminated altogether any expense on account of wiring loss from your figures in calculating service connection charges and the expense incident to the movements covered by those charges, what would you say as to whether or not the service connection charges in the proposed telephones would or would not then be reasonable in your judgment?

A. Eliminating this item of wiring loss which amounts on the average to $3.03, the net costs of other items charged to expense would still be considerably in excess of the proposed charges for service connections.

Q. Have you prepared an Exhibit showing the effect of [fol. 9965] service connection charges, the Exhibit being a comparative statement showing the distribution of service connection expenses between stations of various lengths of life and the burdens and benefits caused and resulting therefrom?

A. Yes, sir, I have.

Mr. Burr: The Exhibit may be marked as Cooper Exhibit No. 14, and we offer it in evidence.

And thereupon the table last above referred to is admitted in evidence on behalf of The Ohio Bell Telephone

Company and is herewith submitted and marked Cooper Exhibit No. 14.

The Witness: It has already been shown that there is a very high rate of turn-over of stations and that the total expenses for service connections and disconnections, if distributed uniformly among all subscribers would lead to an unfair distribution of that expense. This table, which is computed from the actual experience in Columbus, is stations terminated between December 1st, 1920, and June 1st, 1921, using the average service connection expense for Columbus of $9.81, shows the effect of collecting all of that service connection expense through monthly rates and, second, the effect if a service connection charge of $4.00 were in effect. In Column A is shown various periods of service starting with three months and running down to eighteen and nineteen years to cover the stations that were analyzed.

[fol. 9966] Q. Where did you get those stations?

A. Those are residence stations in Columbus terminated from December 1st, 1920, to June 1st, 1921; the same data used in the previous Exhibits.

Q. That is what I wanted to bring out.

A. In Column B we have shown the distribution of those stations according to the length of life. For example, 146 were terminated within three months; 214 had a life from 3 to 6 months; 158 were from 6 to 9 months, and so on down to one station that was between 18 and 19 years in life. In Column C is shown the per cent corresponding to that number of stations on a non-cumulative basis, and in Column D on a cumulative basis.

Now in Columns E, f and G we have shown the effect if all service connection expense is collected through the monthly rates. The total service connection expense for those stations would amount to $15,676.38, and distributing that according to the life in months and years we find that the average amount collected through the monthly rates for the three months station would be 95 cents and for the station that lived from 18 to 19 years, $69.93.

Now, the average service connection expense is $9.81. So deducting those amounts from $9.81 we get, in Column F, the saving to the short term subscriber which starts at $8.86 for the three months subscribers and runs down to 36 cents for the two to three year subscriber, and in Column

G the penalty for the long term subscriber which starts with $3.42 for the three to four year subscriber and runs [fol. 9967] down to $60.12 for the man who has kept his service from 18 to 19 years.

Now in Columns H, I, J, K and L, we have shown the effect of collecting a $4.00 service connection charge and the balance of the service connection expense through the monthly rates. In Column H is shown the service connection charge of $4.00.

Column I then would be the amount collected through the monthly rates toward the service connection expense.

Column J would be the sum of the service connection charge and the payments through the monthly rates, and,

Column K we have the saving for the short term subscribers in the case of three months, $5.25, running down to 20 cents for the two to three year subscriber.

And the burden for the long term subscriber is in Column L.

This table shows clearly the effect of the $4.00 service connection charge in reducing that wide range and the saving to the short term subscriber and the burden to the long term subscriber.

Chairman Poor: Mr. Burr, how much more will you have?

Mr. Burr: We will not have very much more.

Chairman Poor: Do you gentlemen desire to cross examine this witness?

Mr. Leach: There is at least one question we want to know and that is the one asked Mr. Reed, the total income to be derived in the State of Ohio.

[fol. 9968] Chairman Poor: I just want to arrange it; we have gone beyond the hour of adjournment and it is just a question whether we can get through this evening.

Mr. Dotson: Well, now, if Your Honors please——

Chairman Poor: If it will just take a few minutes, all right, and if not we will recess until tomorrow morning.

Mr. Dotson: Well, Your Honors, if I may express here the view that I have of this matter, viewing it from my point, there has been introduced quite a mass of statistics and information evidently of considerable value, and great care has been given to it and attention and skill and by those who are thoroughly familiar with the subject under discussion, and personally I feel almost helpless in the

present subject in being able to conduct any intelligent cross examination or doing anything with it today.

This information also convinces me that we are dealing with basic and vital facts that have to do with the fixing of any and all rates for telephone service to a greater or less extent.

In other words, any time in the future that we are called upon to discuss and consider the general rates of service for users of phones we will have practically the same set of facts and the same line of information.

Now that being true it has occurred to me that if it can possibly be done with any degree of reasonableness, that we have a continuance of this hearing, say for four or six weeks, if possible, giving us all a chance to go over this [fol. 9969] evidence if we can be furnished with a copy of it and in that way we would shorten our process here. We could approach the matter probably a great deal more intelligently. I know that whatever part I expect to take in it I would be able to do expeditiously and to the point without any delay and without much wandering and rambling around. As it is today I cannot even do that because I do not know enough about this. And the only way I can arrive at any intelligent idea so as to serve my community in any degree of value whatever is to have an opportunity to go over these facts and figures. I presume the other gentlemen here are practically in the same position.

This is the first time I have ever been before this Commission and I do not know what your method of procedure is only what I have observed here today. I do not know what policy has been followed in the matter of continuances. But it seems to me that we are the only people, however, that are really put to any inconvenience on account of a continuance because we have to travel back home and back here again. I presume that the witnesses here today, if we desire to cross examine them would not be caused any great degree of trouble to be here again. I take it that the spirit of fairness and frankness is prevailing here among all parties and that is very commendable, and that ought to afford a greater reason why we should have this opportunity it seems to me.

Mr. Burr: We have not any objection to such an arrangement, Your Honors. I make this suggestion, that while [fol. 9970] the gentlemen on the other side, if they do not mind being termed as being on the other side, are con-

sidering the Exhibits and the testimony, the Commission's engineers might be doing the same thing with the idea that when we re-convene if they have any cross examination or questions which they care to ask, the questions may be forthcoming at that time. Also I suggest that if we may have 15 minutes more now we can close our case in chief and then gentlemen on the other side will have all of our case in chief to consider.

Mr. Dotson: That is why I spoke as I did.

Chairman Poor: It has been the custom of the Commission in the past, and we will adhere to it in this case, that where the Company is seeking something and using facts and figures which are completely within the power and control of the Company, that upon request of any protestant or anyone contesting the application, to give a reasonable time to study any evidence or facts that have been presented. And we will pursue that policy at this time. However, I just wondered whether before you do leave and go away, if you wanted to go into any extensive examination of this witness to clear up matters in your own mind that would help you while you are gone in studying the Exhibits and all that, we would allow you to do that before you state at this time, but, however, not tonight. That was the point of my question. We have reserved two days for this hearing. And as a matter of fact this Commission sometimes does something else besides sit down in this hearing room and if we sit down here all day long we do [fol. 9971] not get up for anything else, and my object was to see whether we should adjourn permanently tonight to a future date or proceed tomorrow.

Mr. Dotson: I would rather adjourn permanently to the next date.

Chairman Poor: Then we will go on with the understanding that the Company will be allowed 15 minutes to complete its case and there will be no cross examination and we will adjourn to a further date.

By Mr. Burr:

Q. Calling your attention next to Exhibit No. 15, please tell the Commission briefly what that Exhibit shows.

A. Exhibit No. 15 is a statement that is prepared to show in simple form a comparison of the monthly charges for service for short and long term subscribers under a rate system which does not include service connection charges.

The table is based on the same cost and rates for Columbus, namely $9.81 service connection expense and $3.75 monthly rate for individual residence line service, and shows a discrimination if no specific charge is made for service connection.

On the first line we have shown the monthly exchange rate, on the second line the expense for service connection, which is $9.81 divided by the number of months the service is retained, which varies from $3.27 per month for the three months subscriber to 41 cents for the 24 months subscribers. On the next line is the balance representing the sum paid per month for regular monthly service rendered, varying from 48 cents per month for the three months subscribers to [fol. 9972] $3.34 per month for the 24 months subscriber.

Mr. Burr: I now offer Cooper Exhibit No. 15 in evidence.

And thereupon the statement last above referred to is admitted in evidence on behalf of The Ohio Bell Telephone Company and is herewith submitted and marked Cooper Exhibit No. 15.

Q. Can these discriminations be eliminated by imposing service connection charges and to what extent?

A. That discrimination can only be entirely eliminated by imposing a service connection charge equal to the service connection expense but it can be materially reduced by imposing a service connection charge such as planned at this time. Another simple form of statement has been prepared to show the effect with the $4.00 service connection charge proposed for Columbus.

Q. That is Cooper Exhibit No. 16?

A. Yes, sir.

Mr. Burr: We offer Cooper Exhibit No. 16 in evidence.

And thereupon the statement last above referred to is admitted in evidence on behalf of The Ohio Bell Telephone Company and is herewith submitted and marked Cooper Exhibit No. 16.

[fol. 9973] Q. You may explain Cooper Exhibit No. 16.

A. That table is similar to the one Exhibit No. 15, and shows in the last line that with the service connection charge of $4.00 in effect that the total charge per month for service and service connection will vary for a three months subscriber from $5.08 to $3.92 for the 24 months subscriber. In that case there is a proper relation between the charges for

short term service and for long term service, and the amount of protection afforded the long term subscriber is clearly illustrated.

Q. I wish you would discuss briefly the subject of moves and changes.

A. Under the rate systems where there is no charge at all made for moves and changes it has been found that there is a tendency to have moving and changing of equipment done entirely without any consideration as to the cost incurred by the Company; that a slight preference as to the location of the instruments or convenience of a decorator or other similar items would lead to requests for the moving of equipment which would cost the Company considerable money and in the end that cost must be met by revenue from subscribers and so be reflected in the higher level of rates. The present charges for moving stations are $1.00 from one location to another in the same room, $1.50 from one room to another on the same floor and $2.00 from one floor to another in the same building.

An analysis of 3,542 orders for moves in The Ohio Bell Telephone Company discloses a total cost for this work of $26,642.00 or $7.52 per move. For those moves we obtained [fol. 9974] under the present charges an average revenue of $1.50. Applying to those orders the rates proposed under the schedules now on file the total revenue to be derived would be $3.52 per order, still leaving the revenue to the Company considerably less than the actual cost to the Company for handling that work.

Q. Why are you not proposing to make them as high as the actual cost?

A. Charges for moves and changes must necessarily be not in excess of the service connection charge for a similar service. If they were on the basis of actual cost or in excess of the service connection charge, any subscriber could order his service discontinued and immediately apply for a reinstallation under the service connection charge. For that reason it is not proposed to make this charge higher than the service connection charge.

Q. In the limited time we have left, Mr. Cooper, will you discuss for a moment the purpose of the restoral of service charges?

A. The restoral of service charge is proposed solely as a collection measure and as an aid to us in collecting accounts